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ABSTRACT

This document furnishes a complete copy of the Test Subject's Instructions and the Test Administrator's Handbook for a battery of criterion referenced Job Task Performance Tests (JTPT) for electronic maintenance. General information is provided on soldering, Radar Set AN/APN-147(v), Radar Set Special Equipment, Radar Set Bench Test Set-Up, and Computer Set Checkout. Test Subject and Test Administrator instructions are provided on Peripheral Equipment Tests, General Equipment Tests, Operational Checkout Tests, Special Test Equipment Tests, Remove and Replacement Tests, Adjustment Tests, Alignment Tests, and Troubleshooting Tests. (Author/BJG)

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AFHRL-TR-74-57(II)
Part II

AIR FORCE
HUMAN RESOURCES
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EVALUATING MAINTENANCE PERFORMANCE: TEST ADMINISTRATOR'S MANUAL AND TEST SUBJECT'S INSTRUCTIONS FOR CRITERION REFERENCED JOB TASK PERFORMANCE TESTS FOR ELECTRONIC MAINTENANCE

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ADVANCED SYSTEMS DIVISION
Wright-Patterson Air Force Base, Ohio 45433

January 1975

Final Report for Period 1 January 1969 — 16 July 1974

Approved for public release; distribution unlimited.

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HAROLD E. FISCHER, Colonel, USAF
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of this document is to furnish a complete copy of the Test Subject's Instructions and the Test Administrator's Handbook for a battery of criterion referenced Job Task Performance Tests (JTPT) for electronic maintenance. Part I of Volume II of this series of documents, AFHRL-TR-74-57, reports and describes the development and tryout of this battery of tests.

PREFACE

This document represents a portion of the Exploratory Development program of the Advanced Systems Division of the Air Force Human Resources Laboratory. It contains materials submitted by URS/Matrix Research Company, Falls Church, Virginia 22042 under contracts F33615-69C-1232 and F33615-70C-1695. Dr Edgar L. Shriver was the Principal Investigator.

This document is Part II of the second volume (AFHRL-TR-74-57(II) of a four volume report to be published concerning the evaluation of maintenance performance. The other documents are entitled:

1. Evaluating Maintenance Performance: An Analysis. AFHRL-TR-74-57(I). In press.

2. Evaluating Maintenance Performance: The Development and Tryout of Criterion Referenced Job Task Performance Tests for Electronic Maintenance. AFHRL-TR-74-57(II) Part I. In press.

3. Evaluating Maintenance Performance: The Development of Symbolic Substitutes for Criterion Referenced Job Task Performance Tests for Electronic Maintenance. AFHRL-TR-74-57(III). In press.

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The preparation of all these documents has been documented under task area and work unit 171010, Evaluating the Performance of Air Force Operators and Technicians of Project 1710, Training for Advanced Air Force Systems. Identification of this document by work units included work units 1710-10-03, 1710-04-16, and 1710-10-06. Dr John P. Foley was Task Scientist. Dr John P. Foley and Mr John K. Klesch of the Advanced Systems Division shared the contract monitorship. Dr Ross L. Morgan was the Project Scientist.

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TEST ADMINISTRATOR INSTRUCTIONS

A. GENERAL INSTRUCTIONS

1. Introduction

The AN/APN-147-AN/ASN-35 test package contains a comprehensive series of tests developed to measure job performance of the electronic technician. These tests encompass all phases of day-to-day preventive and corrective maintenance that technicians are responsible for in their respective repair activities.

2. Test Administration Support Criteria

For effective test administration, it is important that ordinary support materials, such as hand tools, test equipment, etc., are readily available for the technician. Adequacy in number and serviceability is of prime importance. Sufficient time should be allotted by the Test Administrator prior to the test schedule to check prime equipment, test equipment and other required support items for reliability.

Test Administration locations will be at job sites at various installations. Each installation will vary in number of personnel to be tested; types of maintenance available; and in facilities available. All of these factors have to be considered before testing can be organized.

Test Administrators should allow sufficient time at each new Administrative Center for familiarization and test support preparation.

3. Safety

Test Administrators must observe the technician to insure that safe maintenance practices are adhered to at all times. GROUND SAFETY considerations take precedence over all others.

4. Recommended Technician - Test Administrator Ratio

The number of technicians that can be tested at once will depend on three conditions:

a. amount of test support equipment available
b. number of technicians available
c. experience of the Test Administrator

Items a and b are self-explanatory. Item c means that as the Test Administrator gains some experience giving the test, he will see ways of giving several technicians the same test at once and also ways of administering several different tests simultaneously.

5. Test Security

A number of features have been "built-in" to these tests to reduce the possibility of test compromise. For example, different forms of the same test are provided that may appear the same, but require a different answer. However, enforcement of test security is the responsibility of the Test Administrator and common precautions should be exercised:

a. Prohibit collaboration between technicians during testing.
b. Provide sufficient space between test stations for uninhibited individual work.
c. Do not permit technicians not actually engaged in testing in the test station area.
d. Insure that test instructions and all support items are accounted for at the conclusion of each test.
e. Do not leave Test Administrator's Manual unattended.

6. Organization of Test Administration Materials

Section A of this Manual provides general information on the AN/APN-147 radar and AN/ASN-35 computer. It describes the equipment, the bench set-up for checking it out, and the procedures for conducting operational checks.

The detailed instructions for administering each individual test are contained in Section B. This includes: test equipment required; test set-up procedures; technician evaluation standards; answer keys; and ways to recover from likely test situations.

Bound separately in the accompanying manual are the Technicians' Test Instructions. This contains the supply of forms, instructions, and answer sheets that the technician will receive. It is important, however, that the technician never be given this whole set of instructions. The Test Administrator is to maintain control of these instructions as well as his own. Such materials as the technician being tested needs are to be removed and provided to him individually.

The Technician's Test Instruction Manual contains:

a. a general background description of the tests
b. a background data sheet for the technician to complete
c. individual test instructions
d. alternate forms of tests
e. evaluation forms for each test

The Test Administrator must select all the relevant materials from the manual, give them to the technician and insure that he gets all the materials back at the conclusion of each test. Figure 1 gives an overview of the events that are to occur in test administration. (Note: Each technician tested will complete a background data sheet only once.)

7. Evaluation Procedures

Test results are obtained in two ways in these tests -- the Test Administrator evaluates the technician's performance, and/or the technician records his findings. Answer Sheets are provided when the technician must record his findings. Performance Evaluation Sheets are provided when the Test Administrator is to evaluate performance. Supplies of both these forms, as required by each test, are provided in the Technician's Test Instruction Manual.

8. Test Administration

The PT series of tests (Peripheral Tests) can be set up in a separate area from the actual work location where the other tests will be administered. This area, however, should be relatively close and easily reached. The tests in the PT series can then be set up in a "country fair" fashion and technicians rotated through them as they come from or go to the other test area (actual work location).

All of the other test series will be administered to technicians at their normal work stations. This is to insure that the technician has available his normal supply of equipment, tools, references, etc. Under good conditions, where each technician has a set of prime equipment, he should be given the test series in the following order: GE, CO, SE, RR, AD, AL, TS, with the PT series taken as convenient. When there is a shortage of equipment, it will be necessary to utilize the available equipment as availability dictates. For example, if there was only one available prime equipment test set, then only one series could be run at a time and test scheduling would have to be set up accordingly. In this case, test security has to be carefully attended to, since there is a greater possibility of exchange of information among technicians. Greater use of the alternate test forms would be required than under conditions of simultaneous testing.

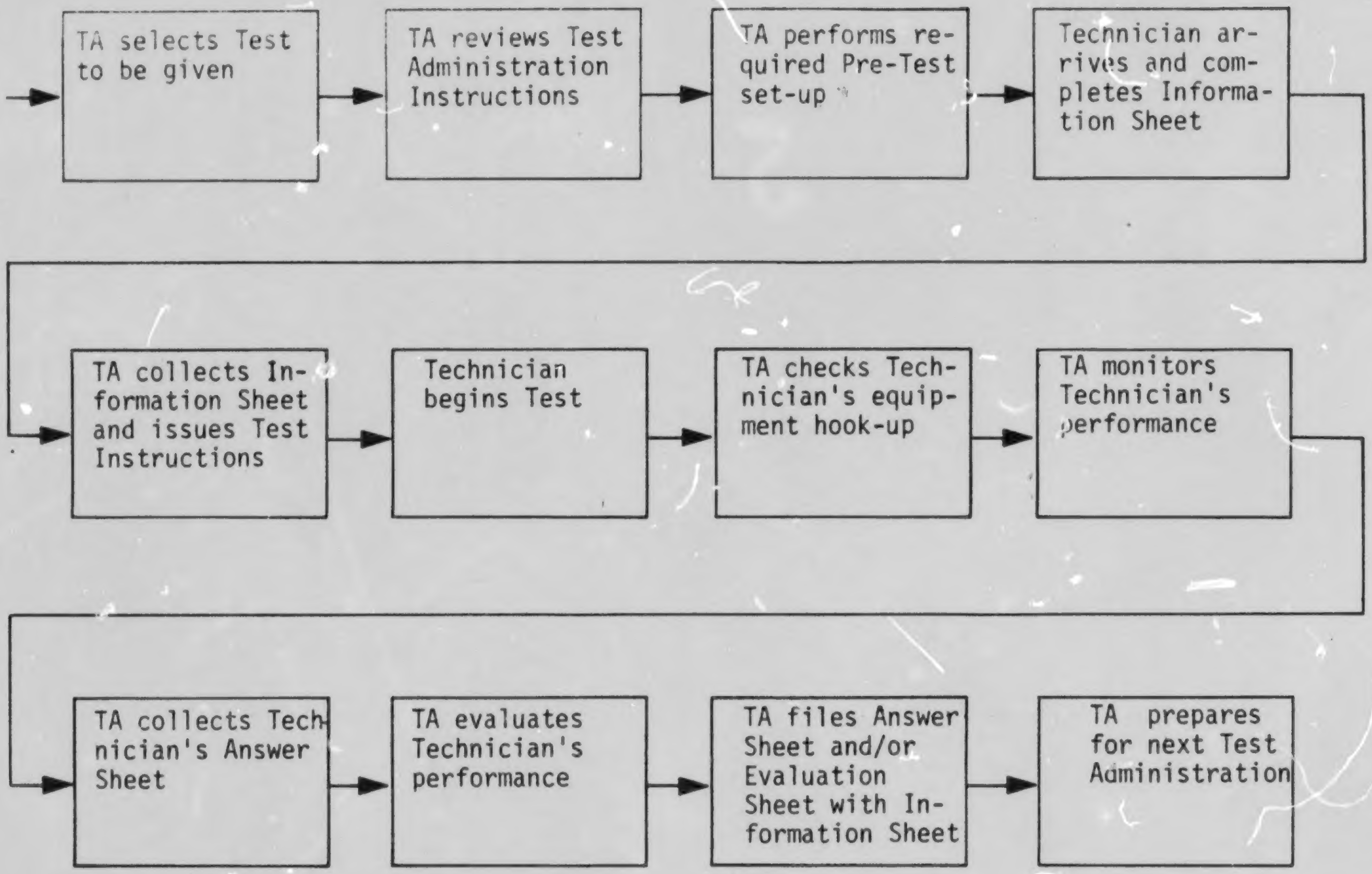

TA selects Test to be given
TA reviews Test Administration Instructions
TA performs required Pre-Test set-up
Technician arrives and completes Information Sheet
TA collects Information Sheet and issues Test Instructions
Technician begins Test
TA checks Technician's equipment hook-up
TA monitors Technician's performance
TA collects Technician's Answer Sheet
TA evaluates Technician's performance
TA files Answer Sheet and/or Evaluation Sheet with Information Sheet
TA prepares for next Test Administration

FIGURE 1. TYPICAL SEQUENCE OF EVENTS IN TEST ADMINISTRATION

9. Test Recovery Guides

It is probable that situations will arise where technicians will unintentionally grossly misalign the prime equipment. A variety of guides are included to serve as short-cuts for the Test Administrator to return the equipment to an operational status. While it is important to get the equipment functioning at the best level possible, it was not feasible to gear the creation of these guides towards absolute peak performance. Such items as the trimpot settings and the template for coils, as they appear in the guides, are relative to the different equipment systems being used. Thus, it is anticipated that although the guides will not enable the Test Administrator to "perfectly" align the equipment, they will enable him to render the equipment "operational."

SECTION A

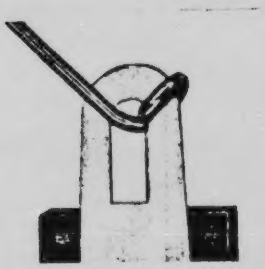
GENERAL INFORMATION

PART I - SOLDERING

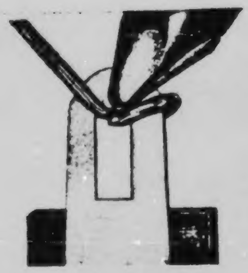
1. Lugs and wires must be clean and free of wax, frayed insulation, and other foreign substances before they are soldered.

2. Use only enough solder to thoroughly wet the connection: it is not necessary to fill the entire hole in a terminal with solder.

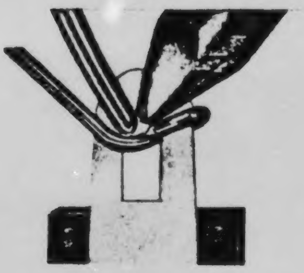
3. Keep the soldering iron tip clean by wiping it from time to time with a damp sponge or cloth.



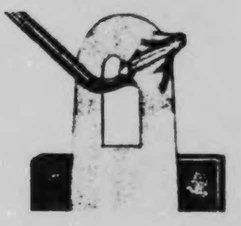
1. Attach the end of the wire to the terminal. If the connection is to be soldered right after the wire is in place, it is not necessary to loop the wire end.



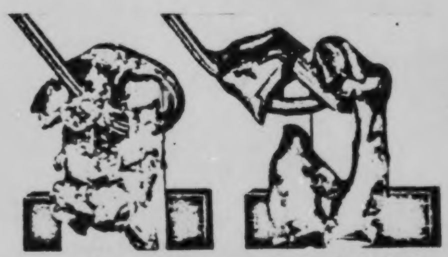
2. Place a flat side of the soldering iron tip against the connection; the tip should touch both the wire and the terminal.



3. Place the solder against the soldering iron tip and the connection; the solder will melt and flow into the connection.



4. Remove the solder, and then the iron from the connection. Do not move the wires until the connection has hardened. Check the connection; a good solder joint should look smooth and bright.



A poor, or "cold" solder connection will usually look crystalline and have a grainy texture,

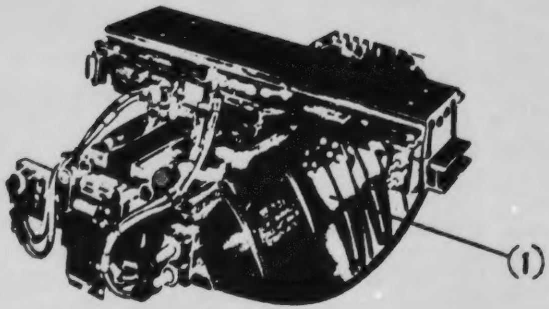
or the solder will stand up in a blob and will not have adhered to the connection.

PART II - RADAR SET AN/APN-147(V)

A. EQUIPMENT DESCRIPTION

The basic components of the Radar Set AN/APN-147(V) are:

(1) Antenna AS-1168A/APN-147(V)
(2) Receiver-Transmitter RT-625A(P)/APN-147(V)
(3) Tracker, Frequency, CV-1181A/APN-147(V)
(4) Control, Radar Set, C-3747/APN-147(V)
(5) Indicator, Drift Angle - Groundspeed ID-938A/APN-147(V)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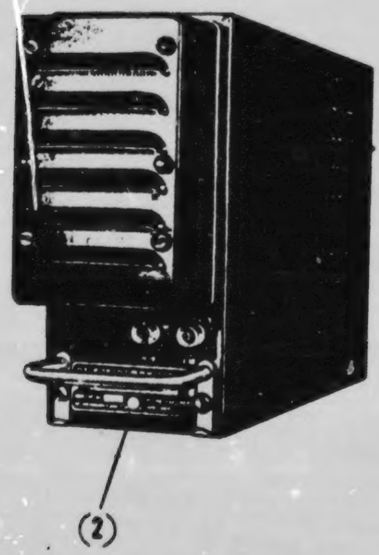
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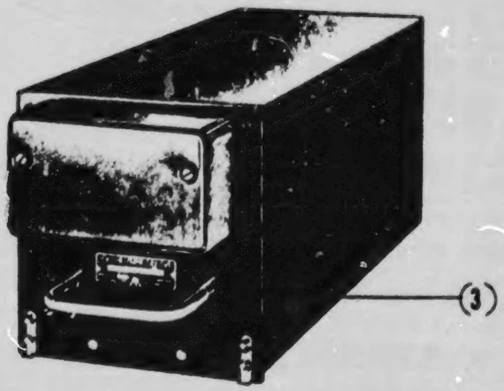
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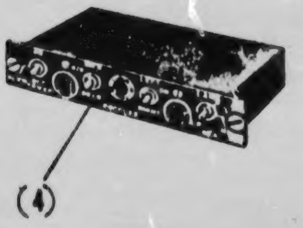
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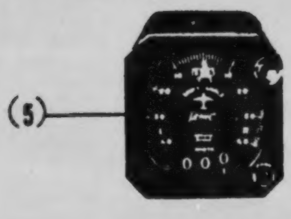
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B. RADAR SET CONTROL

1. POWER (S7501) 3-position toggle switch (1)

   OFF: Turns equipment completely off.

   SLEW: Turns on all power except high voltage; used to allow equipment warmup and carrying out preflight slewing operations.

   ON: Places equipment into full operation.

2. G/S (S7502) 3-position spring return (2)

   INCR: Manually slews groundspeed circuitry and indicator to higher values.

   DECR: Manually slews groundspeed circuitry and indicator to lower values. Control Position: Off

3. DR (S7503) 3-position spring return (3)

   LEFT: Manually slews drift angle left.

   RIGHT: Manually slews drift angle right.

   Central Position: Off

4. Terrain (S7504) 3-position toggle switch (4)

   LAND: Land mode of operation.

   LO SEA: Selects water bias for continuous 4-beam Janus operation over water.

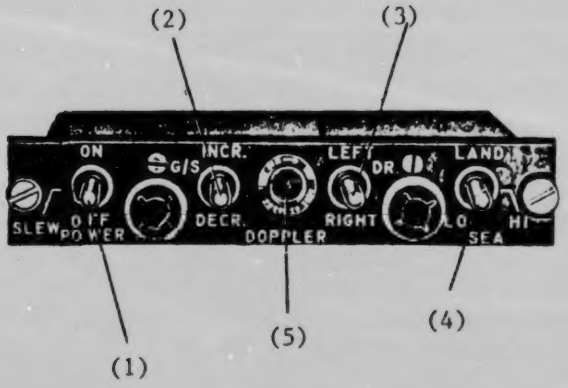
   HI SEA: Permits smooth sea operation when LO-SEA 4-beam Janus operation will not provide sufficient return.

5. Memory warning light (I7502) Lamp (5)

   When lit, indicates equipment is operating in memory mode.

   PRESS TO TEST Pushbutton

   When depressed, checks operation of memory light.


(2)
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ON
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INCR.
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DOPPLER
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HI
(1)
(5)
(4)

C. DRIFT ANGLE INDICATOR

1. PUSH PRE TAKE OFF (S7801) Pushbutton (1)

When momentarily depressed, provides preset selection of drift angle and groundspeed.

2. Memory flag Printed card (2)

No Indication: Equipment is operating in Janus mode.
OFF: Equipment operating in memory mode.
Alternately OFF and No Indication: Equipment is operating in smooth sea mode.

3. DRIFT ANGLE Pointer (3)

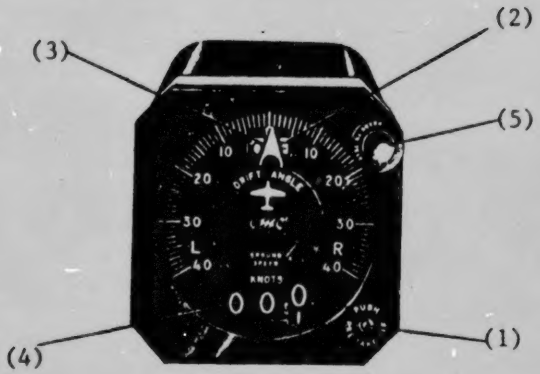
Indicated drift angle.

4. GROUNDSPEED Counter (4)

Indicated groundspeed in knots.

5. Memory warning light (DS7801) Lamp (5)

When lit, indicates equipment is operating in memory mode.
PRESS TO TEST Pushbutton
When depressed, checks operation of memory light.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GROUND SPEED
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KNOTS
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PUSH
(4)
(1)

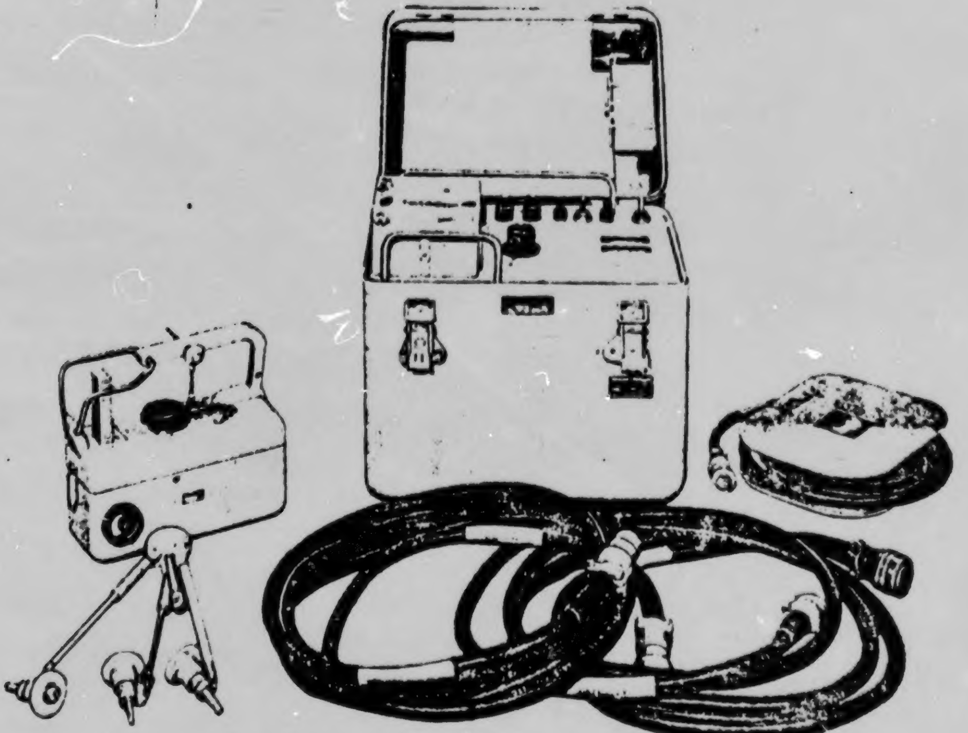
PART III - RADAR SET SPECIAL TEST EQUIPMENT

A. DOPPLER SIMULATOR CMA-544A/T(H)

1. The Doppler Simulator is a portable test set used to check the radar set overall performance.

2. The test set consists of:
   - a. the r-f coupling unit, which contains the antenna and microwave modulator;
   - b. the oscillator control unit, which generates the Doppler spectra and is fitted with the drift and groundspeed switches.

3. It measures:
   - a. overall sensitivity
   - b. groundspeed acquisition
   - c. groundspeed calibration
   - d. response to drift error.



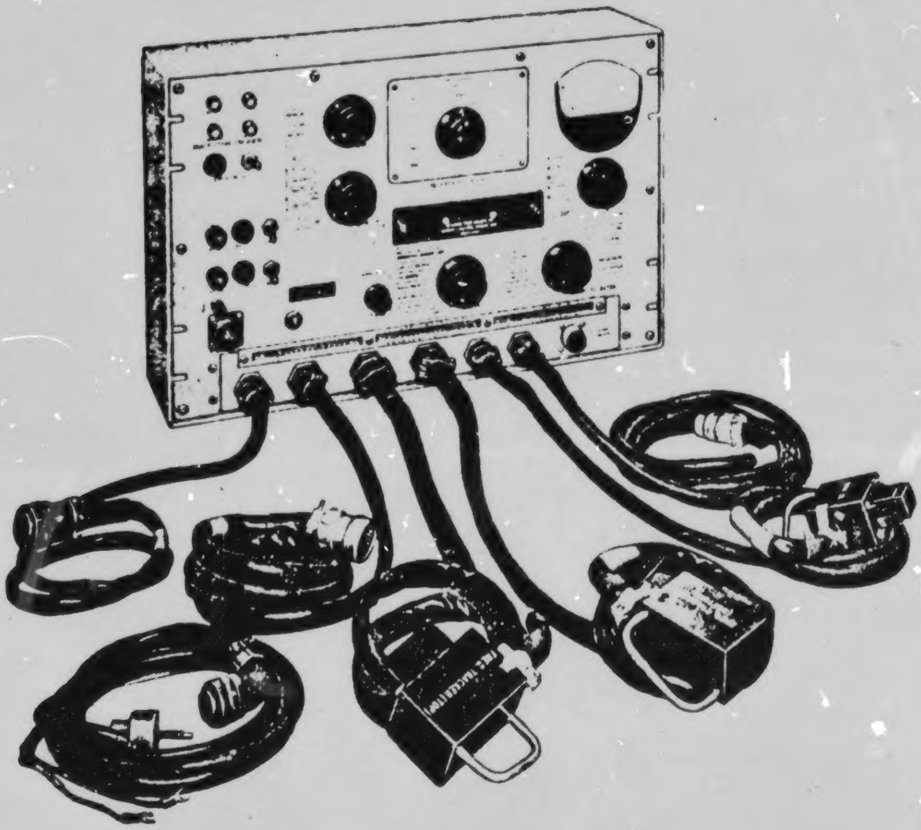
DOPPLER SIMULATOR CMA 544A/T(H)

B. DOPPLER TEST HARNESS CMA-543/T(H)

1. The Doppler Test Harness provides all the interconnections necessary to couple the various components of the radar set together.

2. The switching facilities of the test harness provide for the selection of various test conditions and signals.

3. All the radar circuit functions are brought out to test points.



DOPPLER TEST HARNESS CMA-543/T(H)

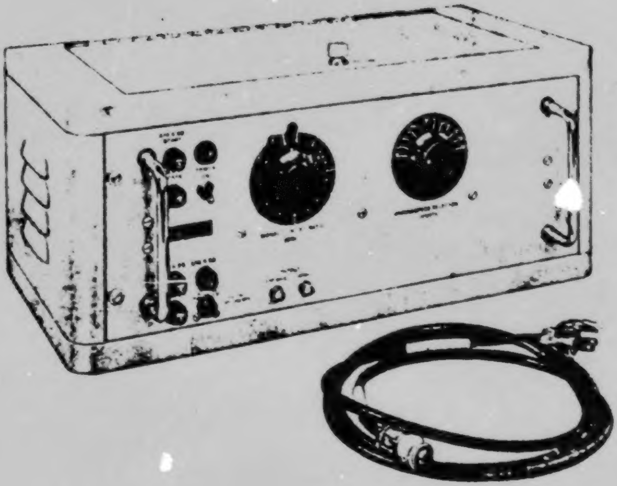
C. DOPPLER GENERATOR CMA-546A/T(H)

The Doppler Generator (1) is a signal generator that produces Doppler spectra in the audio range. The output of the test set is used to check the performance of the Frequency Tracker.

D. DOPPLER SPECTRUM ANALYZER CMA-545/T(H)

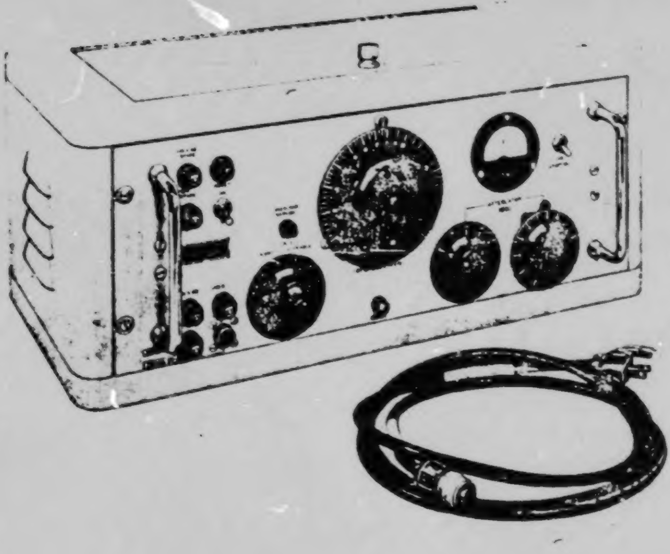
The Spectrum Analyzer (2) is used to calibrate the Doppler Generator.

(1)



DOPPLER GENERATOR CMA-546A/T(H)

(2)

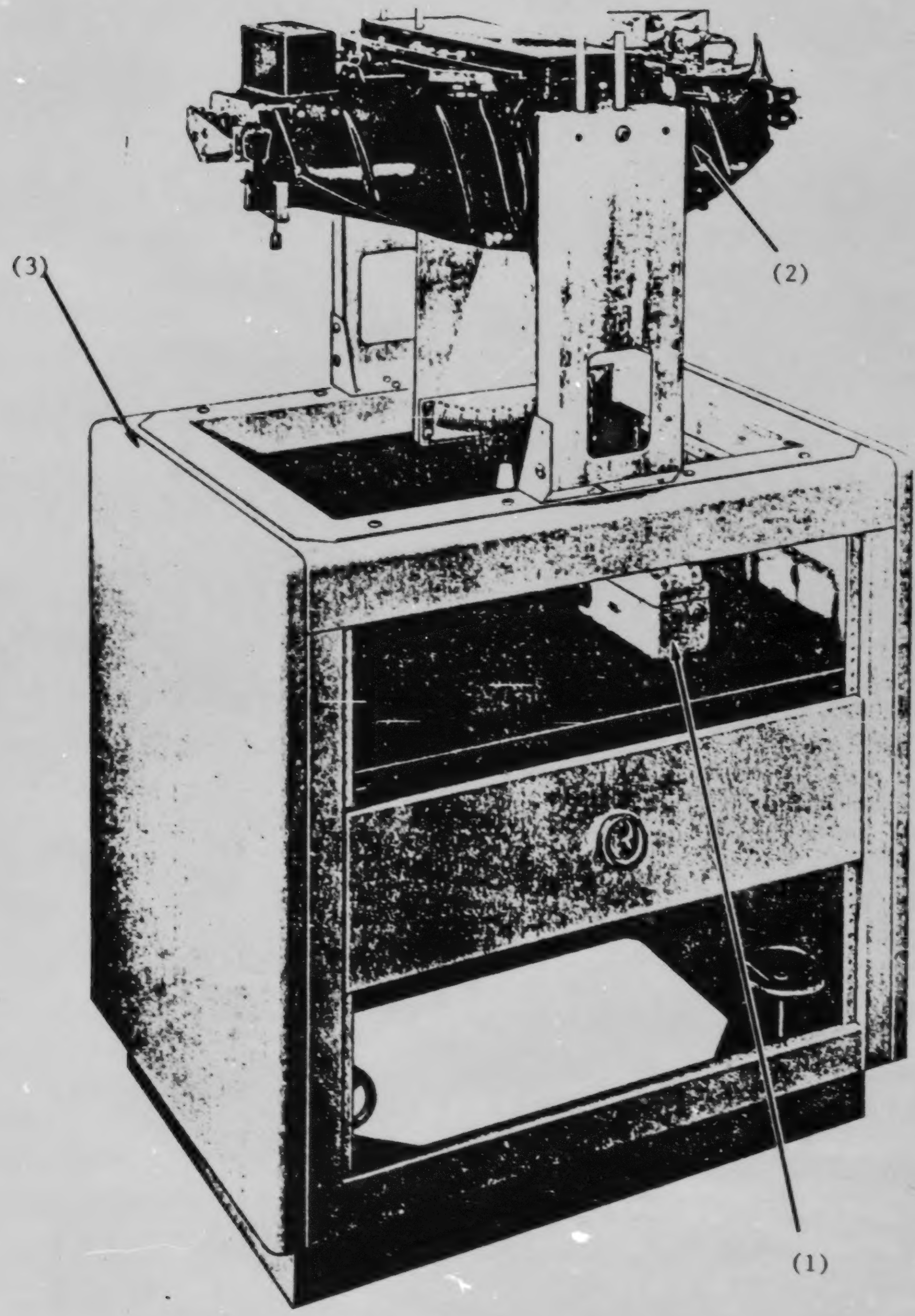


DOPPLER SPECTRUM ANALYZER CMA-545/T(H)

PART IV - RADAR SET BENCH TEST SET-UP

Step 1.

Install r-f coupling unit (1) of Doppler Simulator CMA-547A/T(H) and Antenna (2) in Doppler Antenna Support CMA-547/T(H) (3).


(3)
(2)
(1)

Step 2.

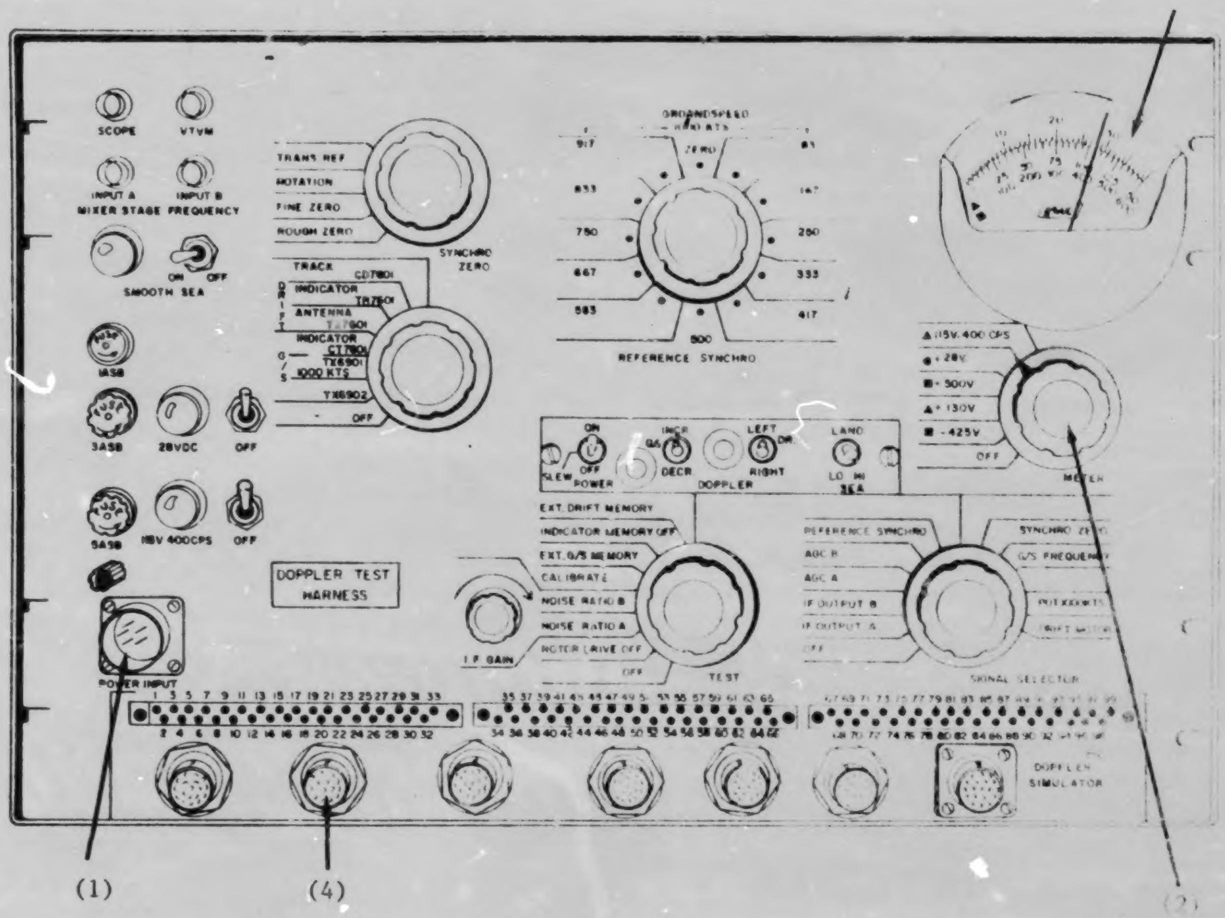
Connect 115 volts 400 Hz and 28 volts dc to J103 (1) of Doppler Test Harness.

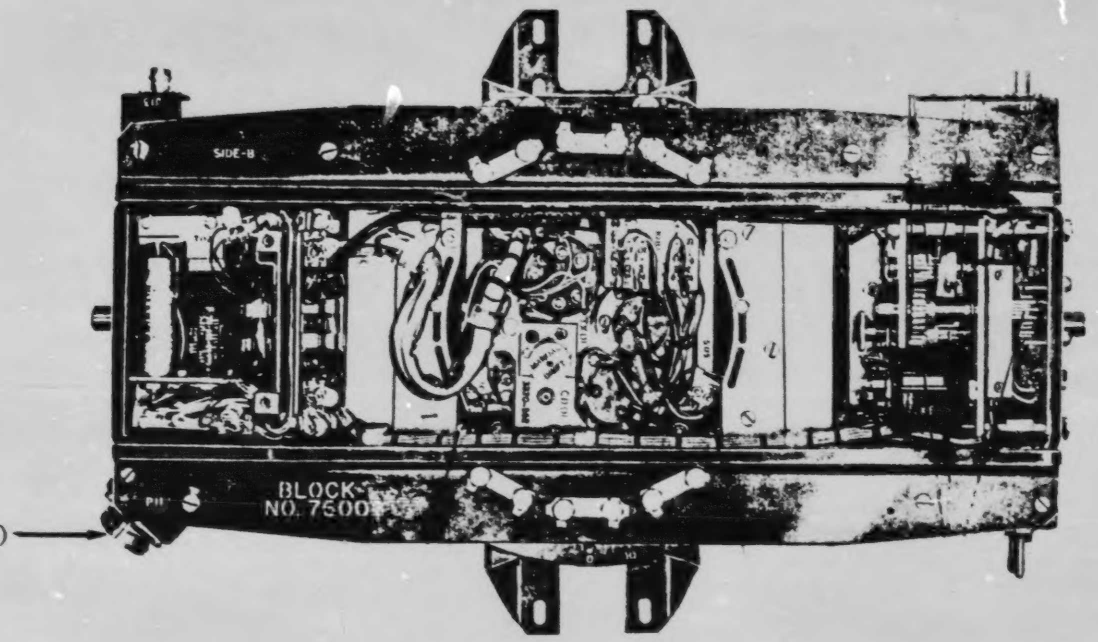
Step 3.

a. Turn 28 VDC power source switch to ON.
b. Turn meter switch (2) to + 28 VDC.
c. If polarity is correct, meter needle (3) will swing clockwise.
d. Turn the 28 VDC power source switch to OFF.

Step 4.

Connect antenna cable (4) of Doppler Test Harness to P7611 (5) of Antenna.


SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE FREQUENCY
ON
OFF
SMOOTH SEA
1AS8
3AS8
28VDC
OFF
5AS8
115V 400CPS
OFF
POWER INPUT
DOPPLER TEST
HARNESS
TRANS REF
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
TRACK
INDICATOR
ANTENNA
INDICATOR
1000 KTS
OFF
GROUNDSPEED
ZERO
REFERENCE SYNCHRO
917
833
750
667
583
500
417
333
250
167
83
ON
OFF
POWER
SLEW
INCR
DECR
LEFT
RIGHT
DOPPLER
LAND
LO HI
SEA
115V, 400 CPS
+28V
+500V
+130V
-425V
OFF
METER
EXT. DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
MOTOR DRIVE OFF
OFF
TEST
I.F. GAIN
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
OFF
SYNCHRO ZERO
G/S FREQUENCY
DRIFT MOTOR
SIGNAL SELECTOR
DOPPLER SIMULATOR
(1)
(4)
(2)

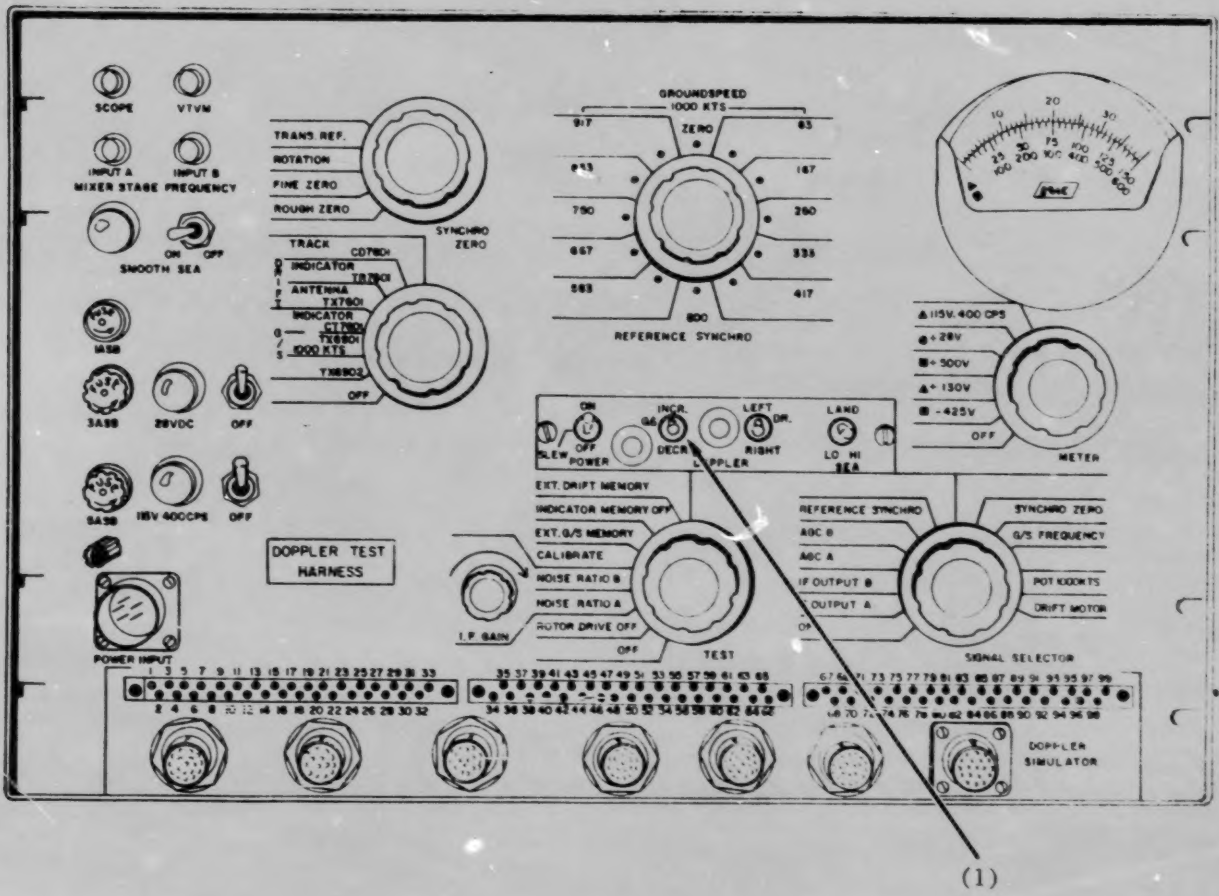

SIDE-B
BLOCK
NO. 7500
(5)

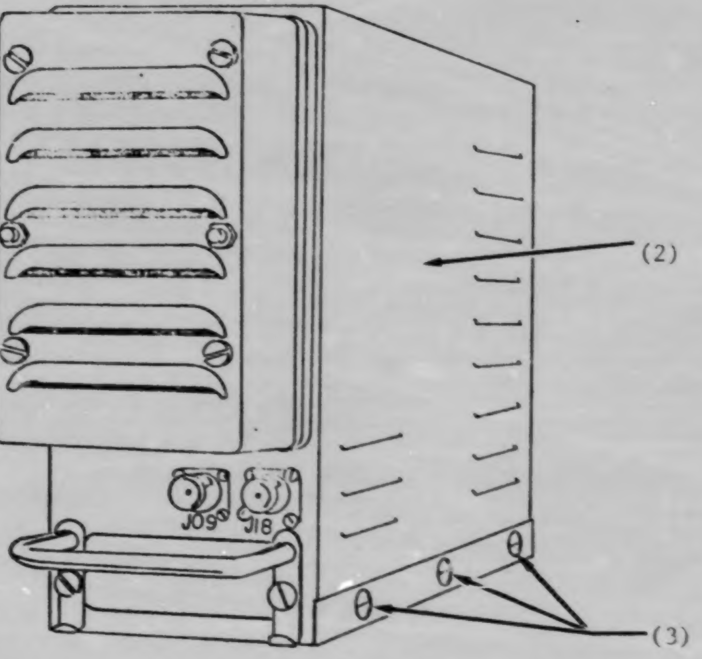
Step 5.

Mount the Radar Set Control (1) in Doppler Test Harness.

Step 6.

Remove dust cover of Receiver-Transmitter (2). Unsnap six dzus fasteners (3). (Three on each side.) Lift cover.


SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE FREQUENCY
SMOOTH SEA
ON
OFF
TRANS. REF.
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
TRACK
INDICATOR CD7801
TR7801
ANTENNA TX7801
INDICATOR CT7801
TX6801
1000 KTS
TX6802
OFF
GROUNDSPEED
1000 KTS
ZERO
917
833
750
667
583
500
417
333
250
167
83
REFERENCE SYNCHRO
115V. 400 CPS
+28V
+500V
+130V
-425V
OFF
METER
1ASB
3ASB
28VDC
OFF
5ASB
115V 400CPS
OFF
SLEW
ON
OFF
POWER
GA
INCR.
DECR.
LEFT
DR.
RIGHT
DOPPLER
LAND
LO HI
SEA
DOPPLER TEST HARNESS
POWER INPUT
I.F. GAIN
EXT. DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
ROTOR DRIVE OFF
OFF
TEST
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
SYNCHRO ZERO
G/S FREQUENCY
POT 1000KTS
DRIFT MOTOR
SIGNAL SELECTOR
DOPPLER SIMULATOR
(1)

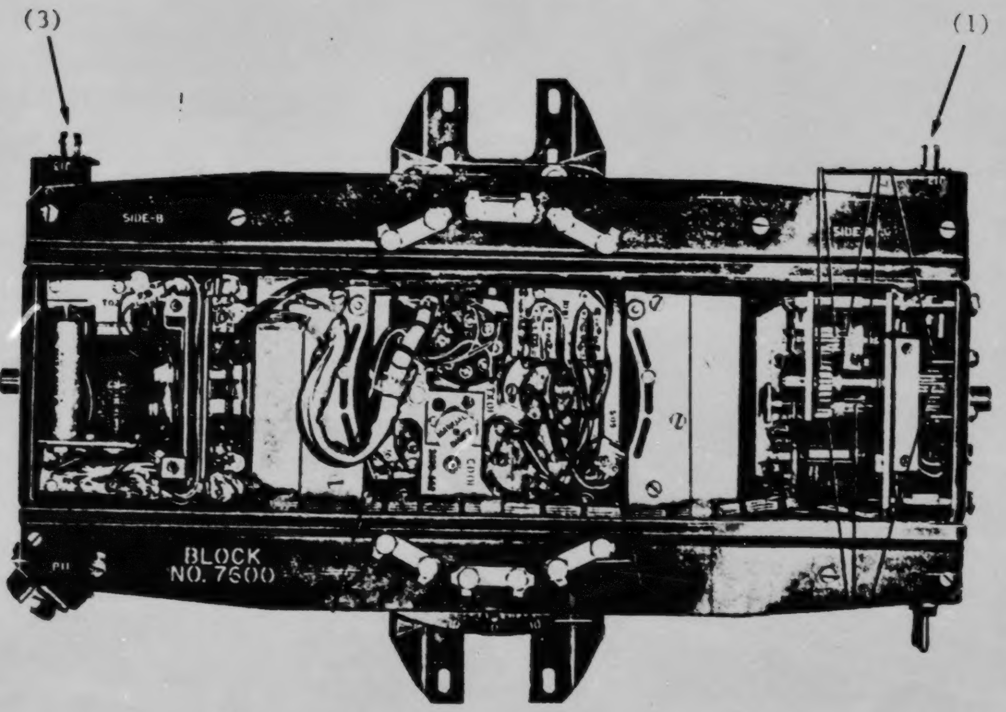

J09
J18
(2)
(3)

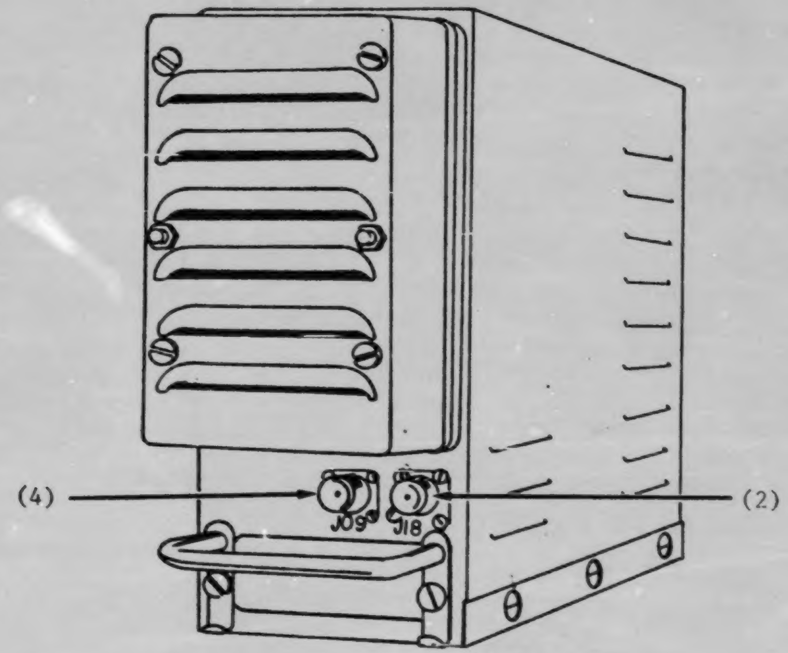
Step 7.

With two I-F coaxial cable assemblies, connect:

J-7612 (1) on Antenna to J-6618 (2) on Receiver

J-7613 (3) on Antenna to J-6609 (4) on Receiver


(3)
(1)
SIDE-B
SIDE-A
BLOCK
NO. 7600

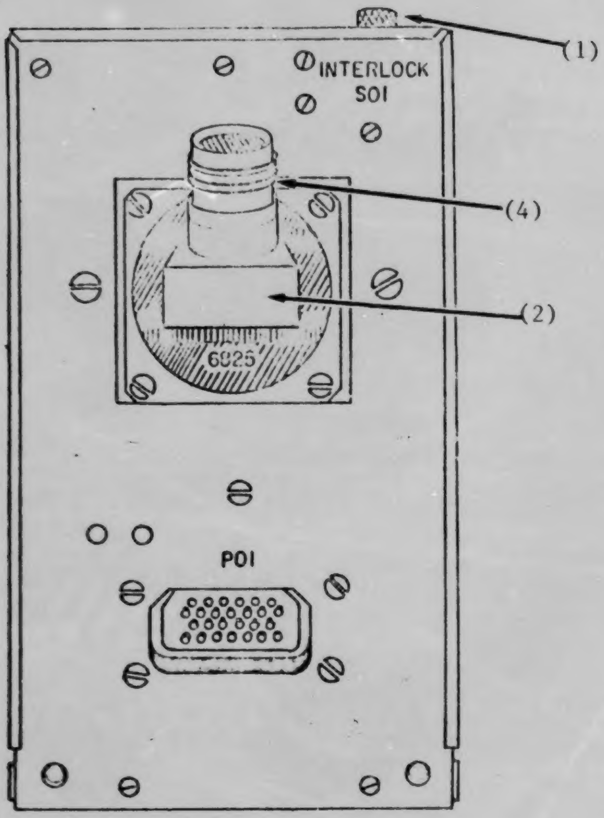

(4)
(2)
J09
J18

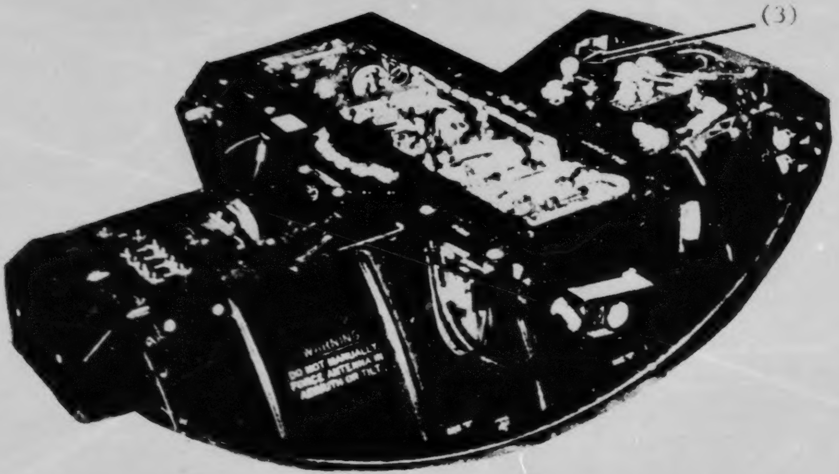
Step 8.

Disable interlock switch S6601 (1)

Step 9.

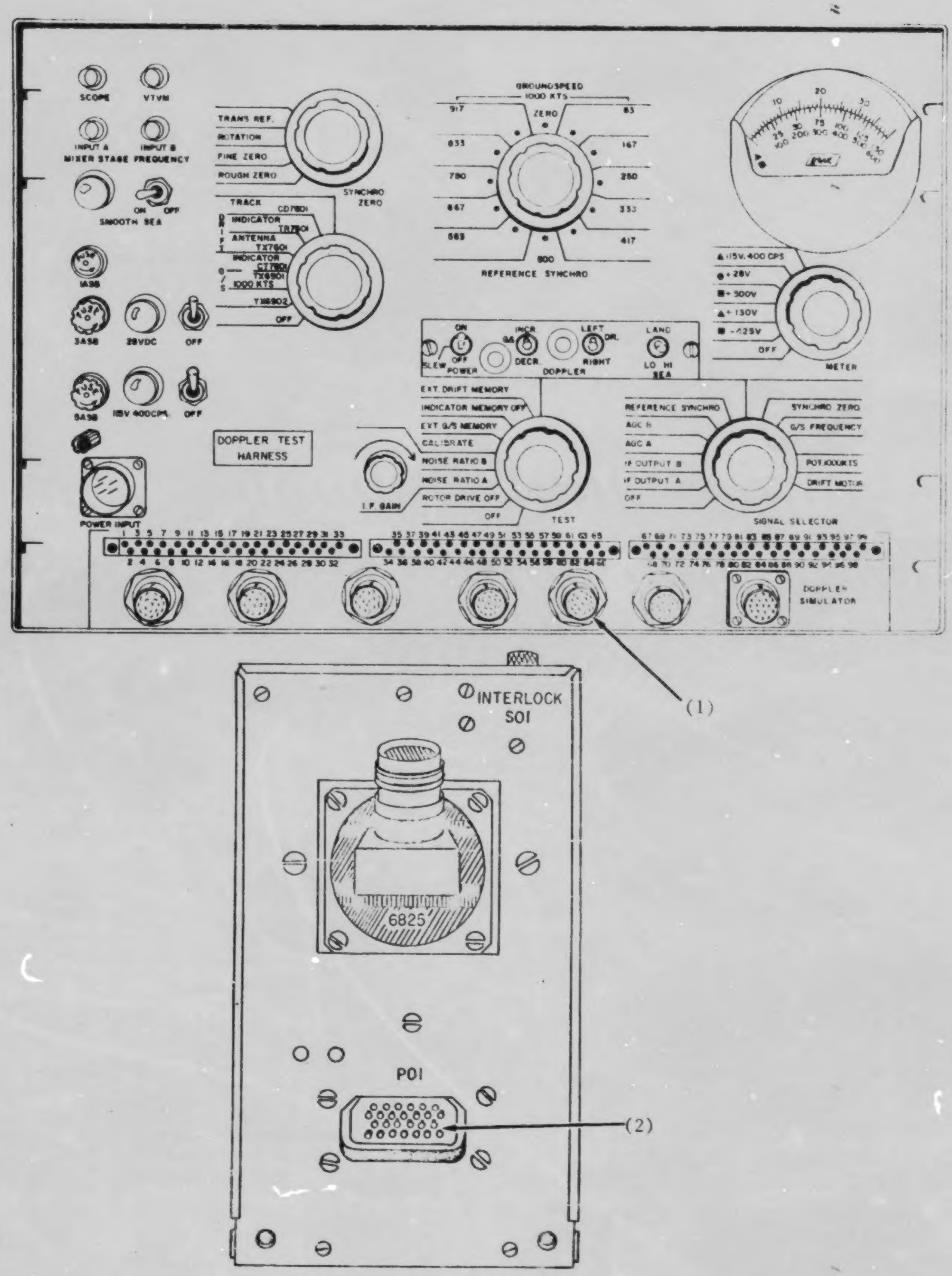
By means of r-f cable assembly and r-f adapter,(2) connect MT7601 (3) of antenna to waveguide (4) at rear of Receiver-Transmitter.


(1)
INTERLOCK
S01
(4)
(2)
6825
P01


(3)
WARNING
DO NOT MANUALLY
FORCE ANTENNA IN
AZIMUTH OR TILT

Step 10.

Connect Receiver-Transmitter cable (1) of Doppler Test Harness to P6601 (2) of Receiver-Transmitter.

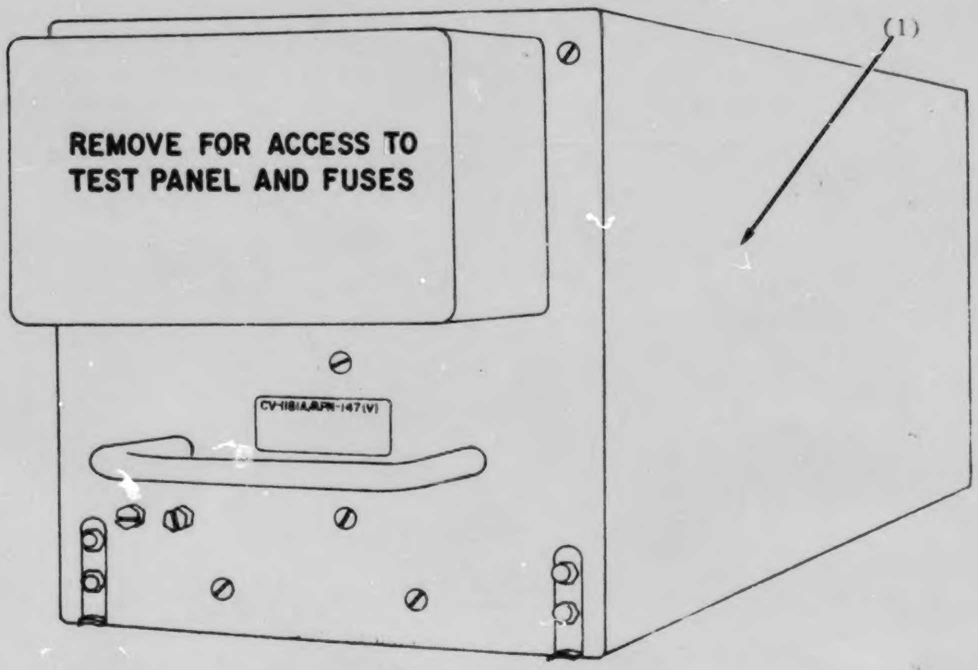

SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE FREQUENCY
SMOOTH SEA
ON
OFF
1A38
3A38
28VDC
OFF
5A38
115V 400CPS
OFF
DOPPLER TEST HARNESS
POWER INPUT
TRANS REF.
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
TRACK
CD7801
DRIFT
INDICATOR
TR7801
ANTENNA
TX7801
INDICATOR
CT7801
G/S
TX6901
1000 KTS
TX6902
OFF
GROUNDSPEED
1000 KTS
ZERO
917
83
833
167
750
250
667
333
583
417
500
REFERENCE SYNCHRO
10
20
30
25
50
75
100
125
150
100
200
300
400
500
600
AB
▲ 115V. 400 CPS
● + 28V
■ + 500V
▲ + 130V
■ - 425V
OFF
METER
SLEW
ON
OFF
POWER
INCR.
DECR.
LEFT
RIGHT
DR.
DOPPLER
LAND
LO HI
SEA
EXT. DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
ROTOR DRIVE OFF
OFF
TEST
I.F. GAIN
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
OFF
SYNCHRO ZERO
G/S FREQUENCY
POT.1000KTS
DRIFT MOTOR
SIGNAL SELECTOR
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65
34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66
67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99
68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98
DOPPLER SIMULATOR
(1)
INTERLOCK
S01
6825
P01
(2)

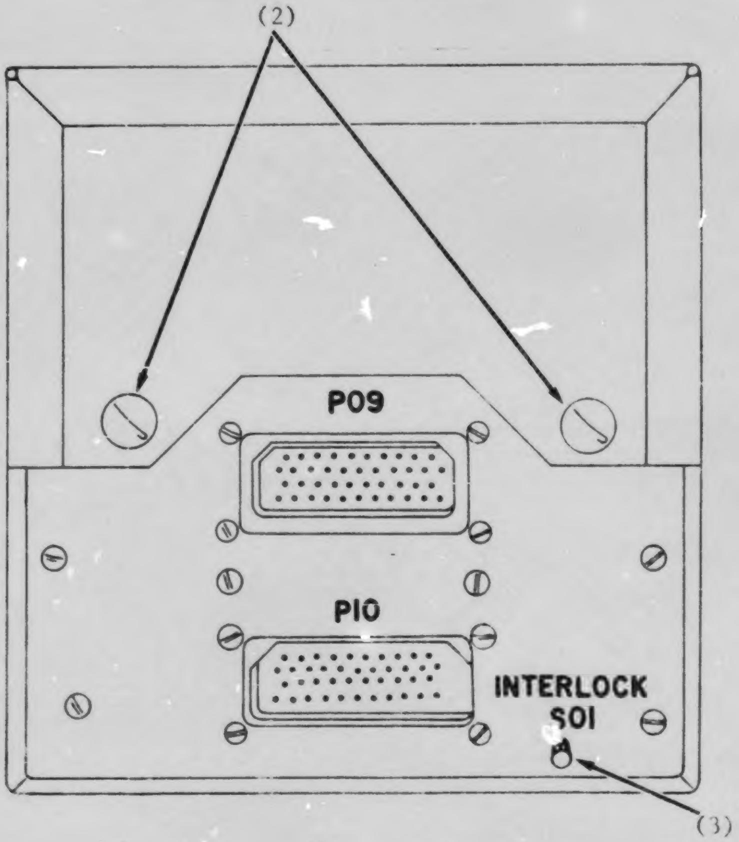
Step 11.

Remove dust cover (1) of Frequency Tracker. Unsnap two dzus fasteners (2). Slide cover off.

Step 12.

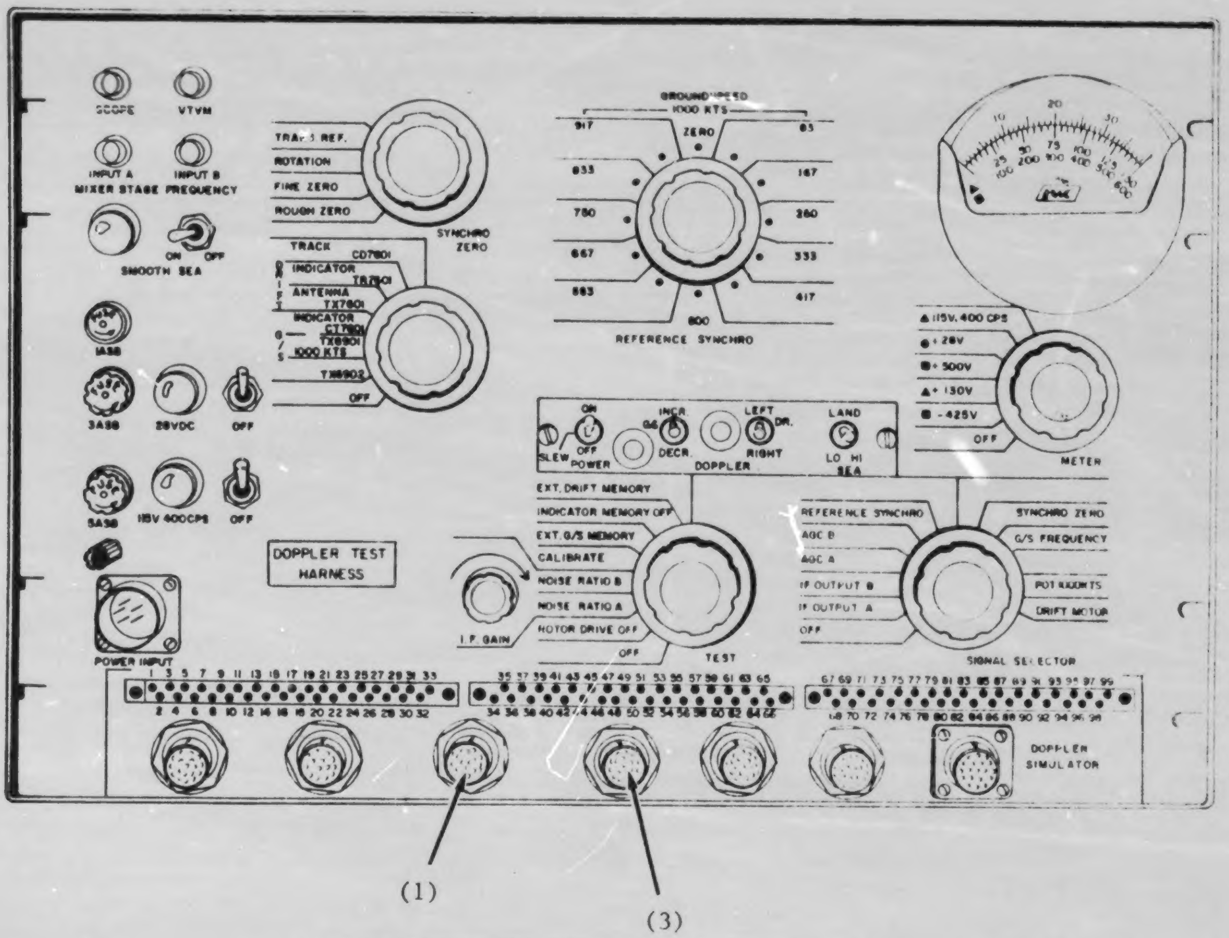
Disable interlock switch S-7301. (3)

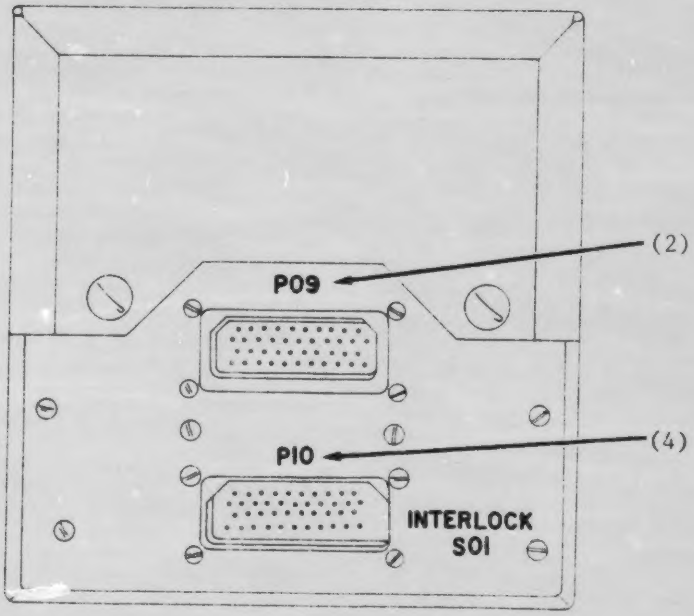

(1)
REMOVE FOR ACCESS TO TEST PANEL AND FUSES
CV-1181A/APN-147(V)


(2)
P09
P10
INTERLOCK
S01
(3)

Step 13.

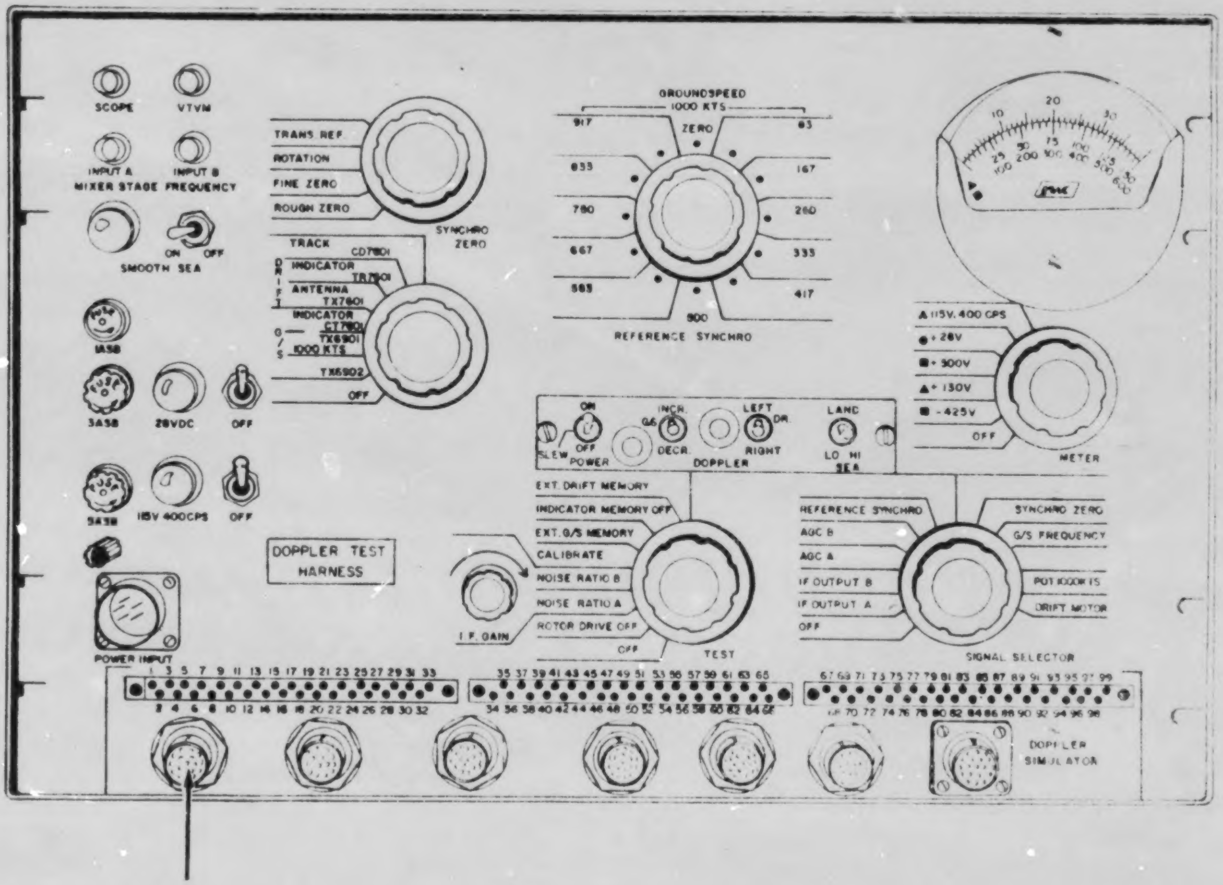
Connect top frequency tracker cable (1) of Doppler Test Harness to P-7309 (2) of Frequency Tracker - bottom frequency tracker cable (3) of Doppler Test Harness to P-7310 (4) of Frequency Tracker.

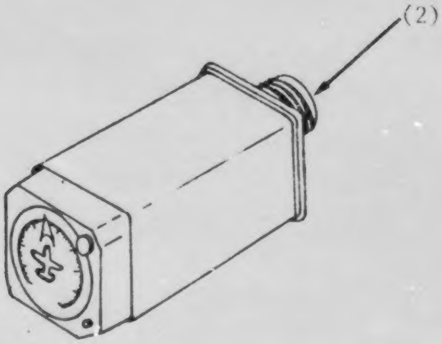

SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE FREQUENCY
SMOOTH SEA
ON
OFF
1A58
3A58
28VDC
OFF
5A58
115V 400CPS
OFF
POWER INPUT
DOPPLER TEST HARNESS
TRANS REF.
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
TRACK
DRIFT
INDICATOR
CD7801
TR7801
ANTENNA
TX7801
INDICATOR
G/S
CT7801
TX6901
1000 KTS
TX6902
OFF
GROUNDSPEED
1000 KTS
917
ZERO
83
833
167
750
250
667
333
583
417
500
REFERENCE SYNCHRO
10
20
30
115V, 400 CPS
+28V
+500V
+130V
-425V
OFF
METER
ON
OFF
SLEW
POWER
INCR.
G.S.
DECR.
DOPPLER
LEFT
DR.
RIGHT
LAND
LO HI
SEA
EXT. DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
MOTOR DRIVE OFF
OFF
TEST
I.F. GAIN
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
OFF
SYNCHRO ZERO
G/S FREQUENCY
POTENTIOMETERS
DRIFT MOTOR
SIGNAL SELECTOR
DOPPLER SIMULATOR
(1)
(3)


(2)
P09
(4)
P10
INTERLOCK
S01

Step 14.

Connect indicator cable (1) of Doppler Test Harness to P7801 (2) of Indicator.


SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE
FREQUENCY
TRANS REF
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
SMOOTH SEA
ON
OFF
TRACK
CD7601
DRIFT
INDICATOR
TR7601
ANTENNA
TX7601
INDICATOR
CT7601
G/S
TX6901
1000 KTS
TX6902
OFF
1AS8
3AS8
28VDC
OFF
3AS8
115V 400CPS
OFF
DOPPLER TEST HARNESS
POWER INPUT
GROUNDSPEED
1000 KTS
917
ZERO
83
833
167
750
250
667
333
583
417
500
REFERENCE SYNCHRO
10
20
30
25
50
75
100
125
150
100
200
300
400
500
600
115V. 400 CPS
+ 28V
+ 300V
+ 130V
- 425V
OFF
METER
ON
OFF
SLEW
POWER
INCR.
G/S
DECR.
DOPPLER
LEFT
DR.
RIGHT
LAND
LO HI
SEA
EXT. DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
ROTOR DRIVE OFF
OFF
TEST
I. F. GAIN
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
OFF
SYNCHRO ZERO
G/S FREQUENCY
POT 1000KTS
DRIFT MOTOR
SIGNAL SELECTOR
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65
34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66
67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99
68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98
DOPPLER SIMULATOR
(1)

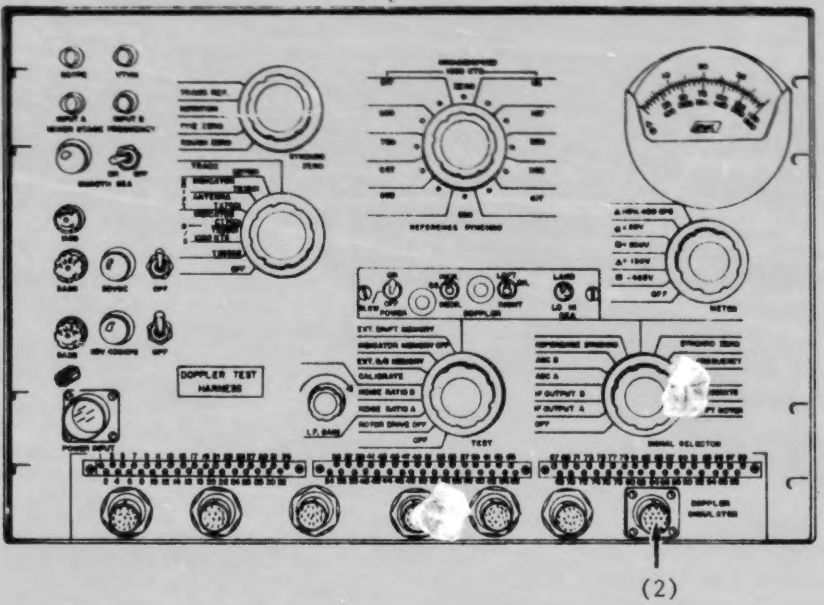

(2)

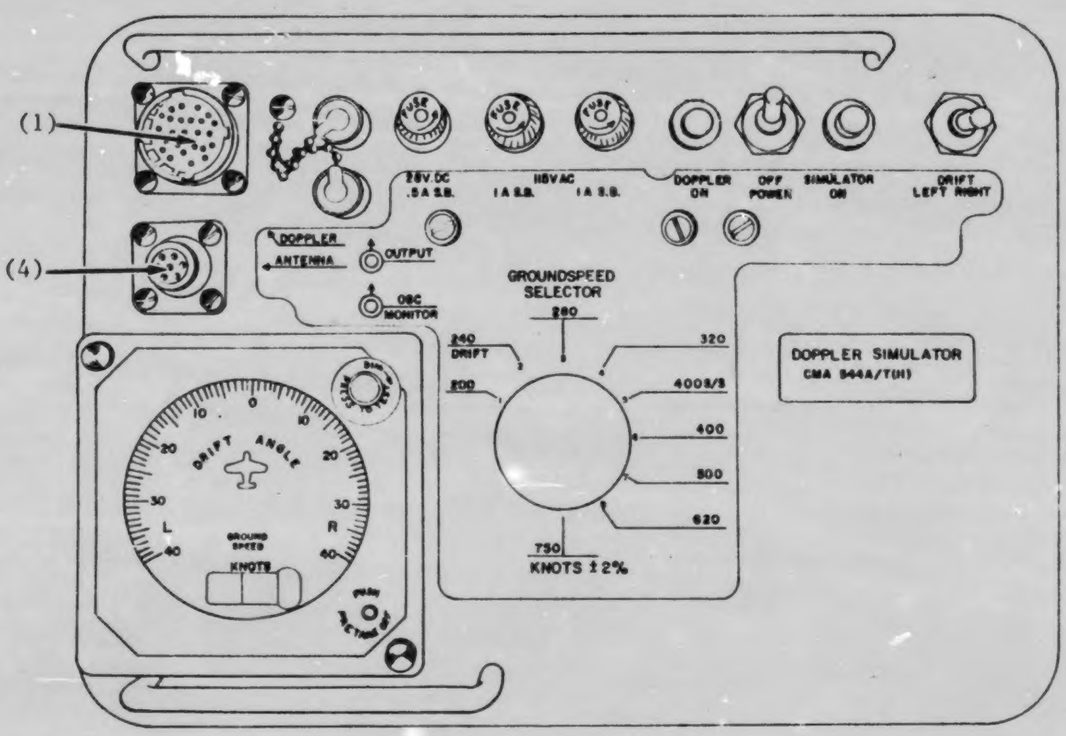
Step 15.

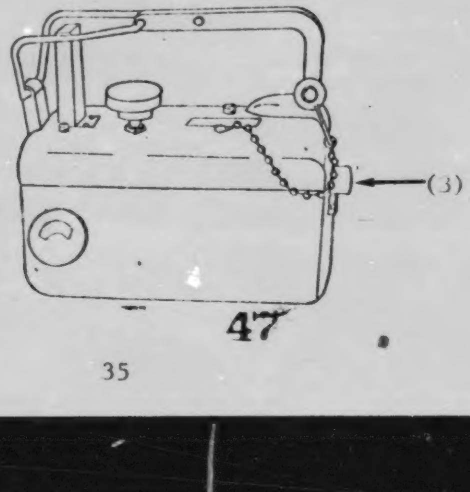
With the electronic-to-aircraft cable assembly, connect the Doppler Simulator jack (1) to Doppler Test Harness (2).

Step 16.

With the electronics-to-antenna cable assembly, connect the Doppler Simulator r-f coupling unit jack (3) to the Doppler Simulator jack (4). If necessary, use extension cable between r-f coupling and Doppler Simulator.


DOPPLER TEST HARNESS
POWER INPUT
TEST
SIGNAL SELECTOR
REFERENCE SYNCHRO
METER
DOPPLER SIMULATOR
(2)


(1)
(4)
FUSE
FUSE
FUSE
28V.DC .5A S.B.
115VAC
1A S.B.
1A S.B.
DOPPLER ON
OFF POWER
SIMULATOR ON
DRIFT LEFT RIGHT
DOPPLER ANTENNA
OUTPUT
OSC MONITOR
GROUNDSPEED SELECTOR
280
240 DRIFT
200
320
400S/S
400
500
620
750
KNOTS ± 2%
DOPPLER SIMULATOR
CMA 544A/T(H)
DRIFT ANGLE
L
R
GROUND SPEED
KNOTS


(3)

47

PART V - RADAR SET CHECKOUT

Step 1.

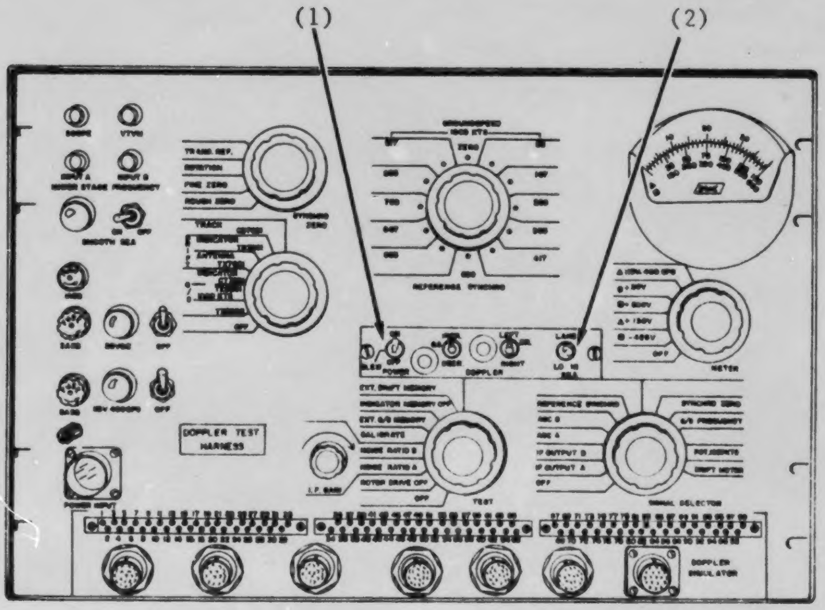
On the Radar Set Control (located in the Doppler Test Harness);

a. Set POWER switch (1) to OFF.

b. Set the terrain switch (2) to LAND.

N O T E

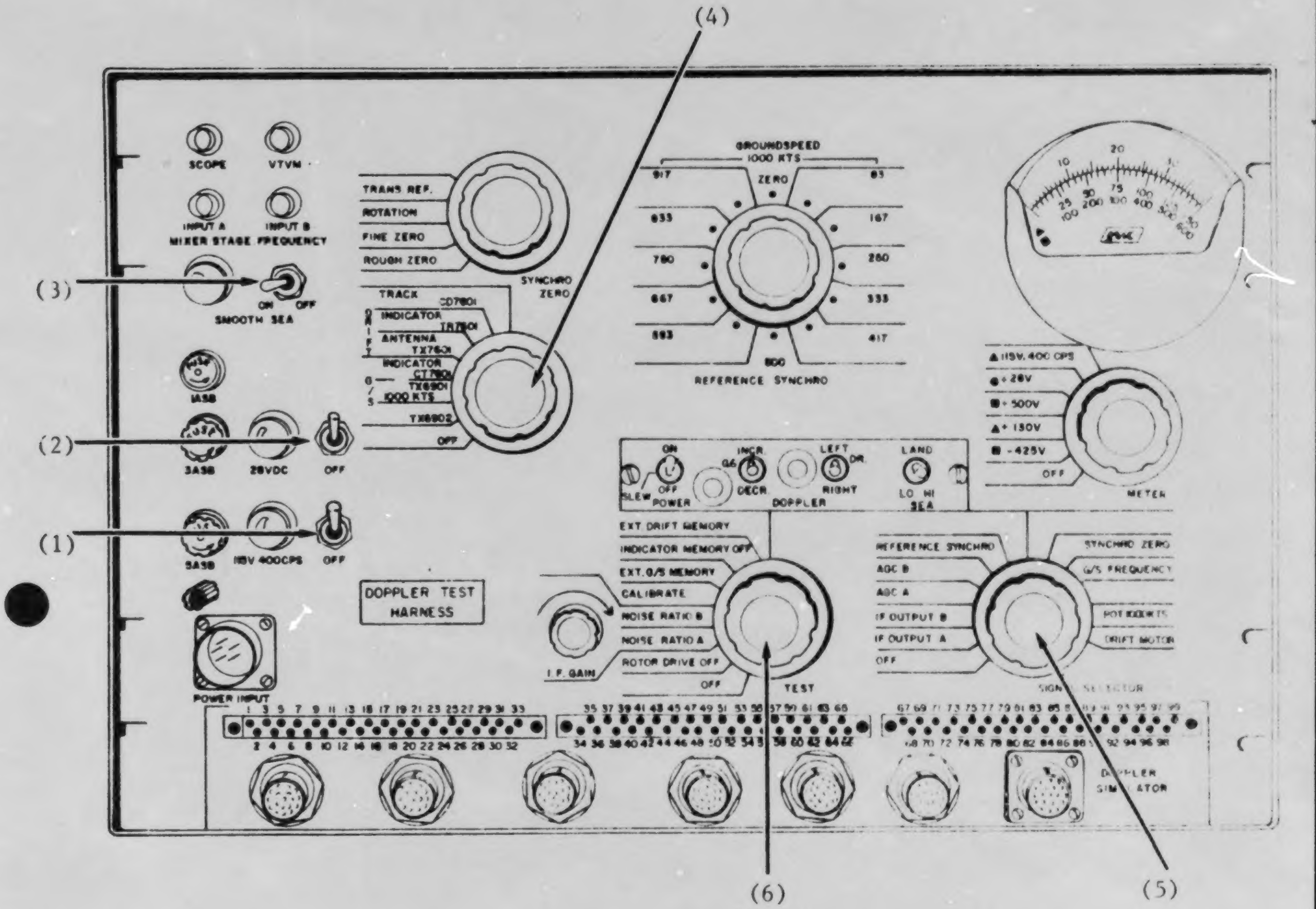
Unless otherwise indicated maintain the drift angle at zero degrees by operating the DR switch when required throughout these tests.


(1)
(2)
SCOPE
VTVM
TRANS. REF.
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
SMOOTH SEA
ON
OFF
ZERO
REFERENCE SYNCHRO
OFF
POWER
DOPPLER
LEFT
RIGHT
LAND
LO
HI
SEA
METER
EXT. DRIFT MEMORY
CALIBRATE
ROTOR DRIVE OFF
OFF
I.F. GAIN
TEST
DOPPLER TEST HARNESS
REFERENCE SYNCHRO
IF OUTPUT B
IF OUTPUT A
SYNCHRO ZERO
DRIFT MOTOR
SIGNAL SELECTOR
POWER INPUT
DOPPLER SIMULATOR

Step 2.

On the Test Harness;

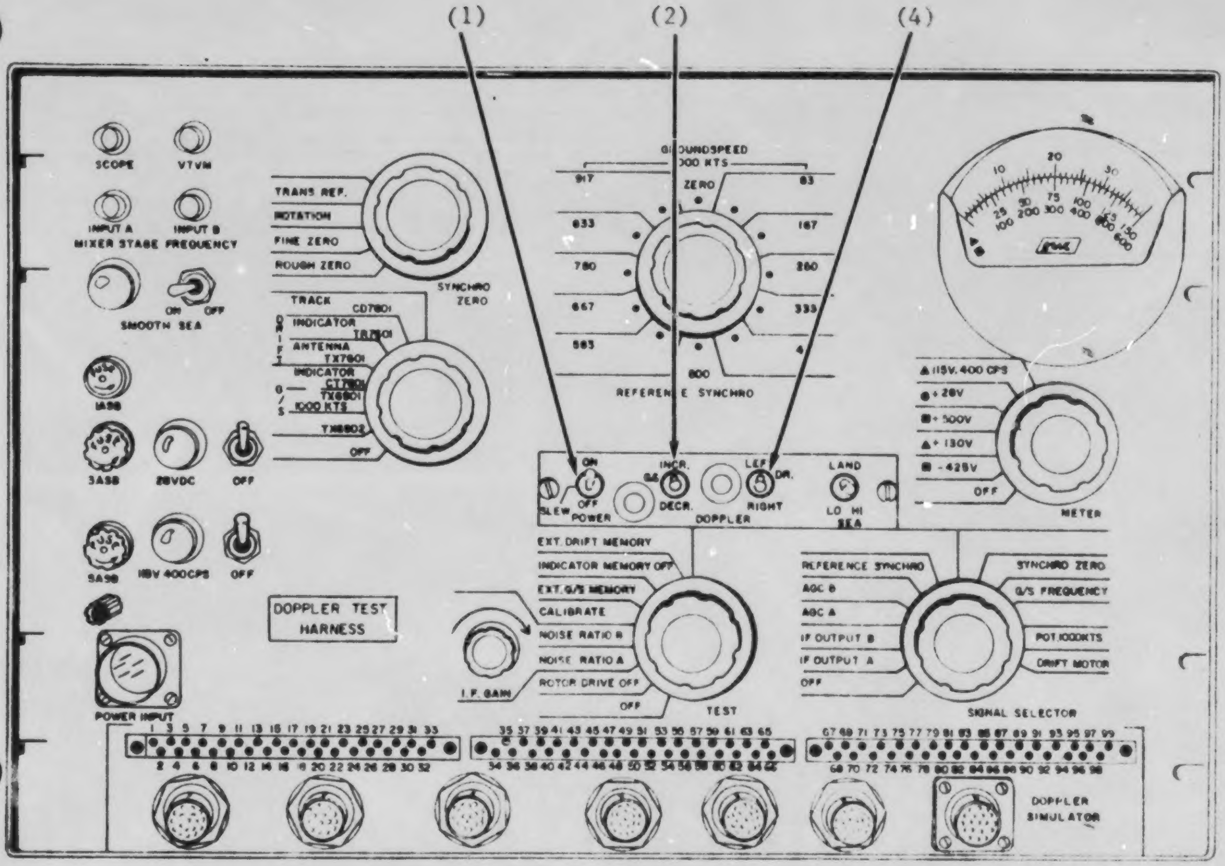
a. Set 115V CPS switch (1) to ON.
b. Set 28 VDC switch (2) to ON.
c. Set SMOOTH SEA switch (3) to OFF.
d. Set SYNCHRO SELECTOR (4) to OFF.
e. Set SIGNAL SELECTOR (5) to OFF.
f. Set TEST switch (6) to OFF.

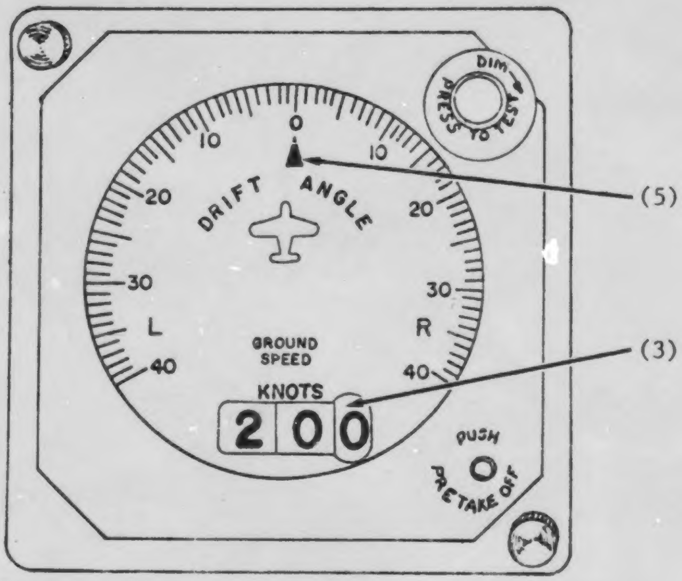

(1)
(2)
(3)
(4)
(5)
(6)
SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE
FREQUENCY
ON
OFF
SMOOTH SEA
1ASB
3ASB
28VDC
OFF
3ASB
115V 400CPS
OFF
POWER INPUT
DOPPLER TEST HARNESS
TRANS REF.
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
TRACK
INDICATOR
CD7601
TR7601
ANTENNA
TX7601
INDICATOR
CT7601
TX6901
1000 KTS
TX6902
OFF
GROUNDSPEED
1000 KTS
ZERO
917
83
833
167
750
250
667
333
583
417
500
REFERENCE SYNCHRO
115V, 400 CPS
+28V
+500V
+150V
-425V
OFF
METER
ON
OFF
SLEW
POWER
INCR.
DECR.
LEFT
RIGHT
DOPPLER
LAND
LO HI
SEA
EXT DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
ROTOR DRIVE OFF
OFF
TEST
I.F. GAIN
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
OFF
SYNCHRO ZERO
G/S FREQUENCY
POT 1000KTS
DRIFT MOTOR
SIGNAL SELECTOR
DOPPLER SIMULATOR

Step 3

On the Radar Set Control;

a. Set the POWER switch (2) to SLEW.
b. Operate the G/S switch (2) until the Indicator reads 200 knots (3).
c. Operate the DR switch (4) until the Indicator reads zero degrees (5).
d. Set the POWER switch (1) to ON.
e. Memory light goes on.


(1)
(2)
(4)
SCOPE
VTVM
INPUT A
INPUT B
MIXER STAGE FREQUENCY
SMOOTH SEA
ON
OFF
1ASB
3ASB
28VDC
OFF
5ASB
115V 400CPS
OFF
DOPPLER TEST HARNESS
POWER INPUT
TRANS REF.
ROTATION
FINE ZERO
ROUGH ZERO
SYNCHRO ZERO
TRACK
DRIFT
INDICATOR CD7601
ANTENNA TR7601
INDICATOR TX7601
G/S
CT7601
TX6601
1000 KTS
TX6602
OFF
GROUNDSPEED
1000 KTS
ZERO
917
833
750
667
583
500
417
333
250
167
83
REFERENCE SYNCHRO
ON
OFF
SLEW
POWER
INCR.
DECR.
LEFT
DR.
RIGHT
DOPPLER
LAND
LO HI
SEA
10
20
30
25
50
75
100
125
150
100
200
300
400
500
600
115V. 400 CPS
+28V
+500V
+130V
-425V
OFF
METER
EXT. DRIFT MEMORY
INDICATOR MEMORY OFF
EXT. G/S MEMORY
CALIBRATE
NOISE RATIO B
NOISE RATIO A
ROTOR DRIVE OFF
OFF
TEST
I.F. GAIN
REFERENCE SYNCHRO
AGC B
AGC A
IF OUTPUT B
IF OUTPUT A
OFF
SYNCHRO ZERO
G/S FREQUENCY
POT. 1000KTS
DRIFT MOTOR
SIGNAL SELECTOR
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65
34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66
67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99
68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98
DOPPLER SIMULATOR


DIM
PRESS TO TEST
0
10
10
20
20
30
30
40
40
DRIFT ANGLE
L
R
GROUND SPEED
KNOTS
200
PUSH
PRETAKE OFF
(5)
(3)

Step 4.

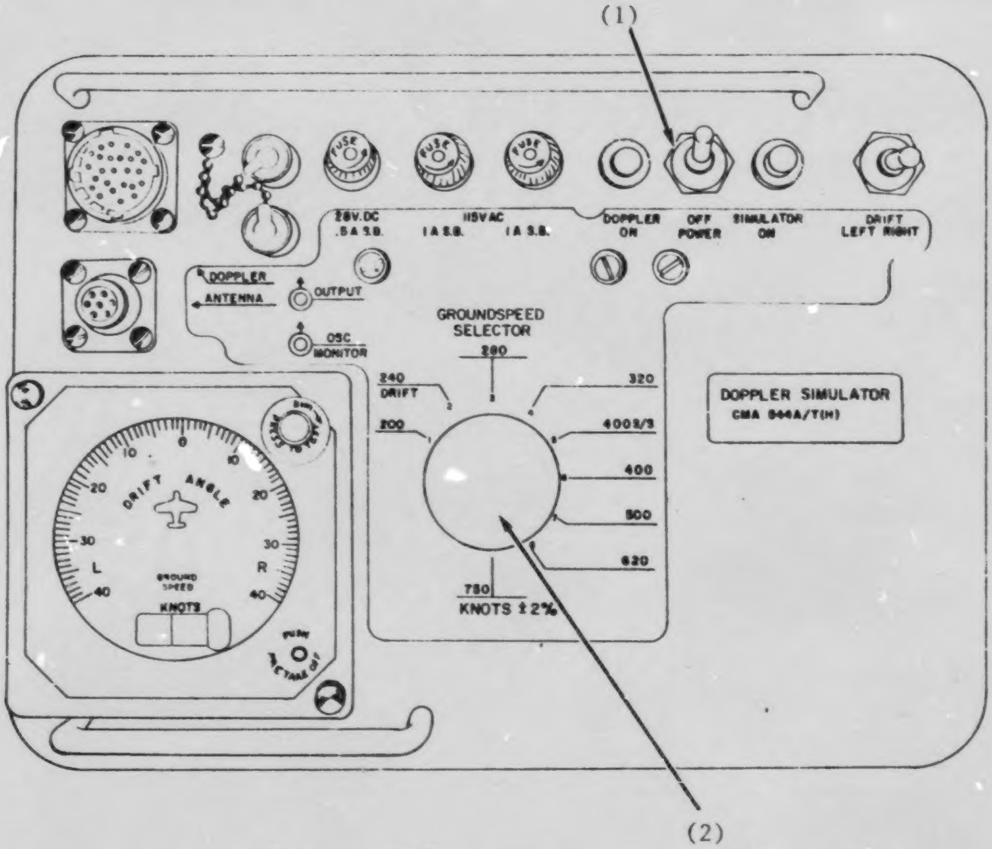
On the Doppler Simulator;

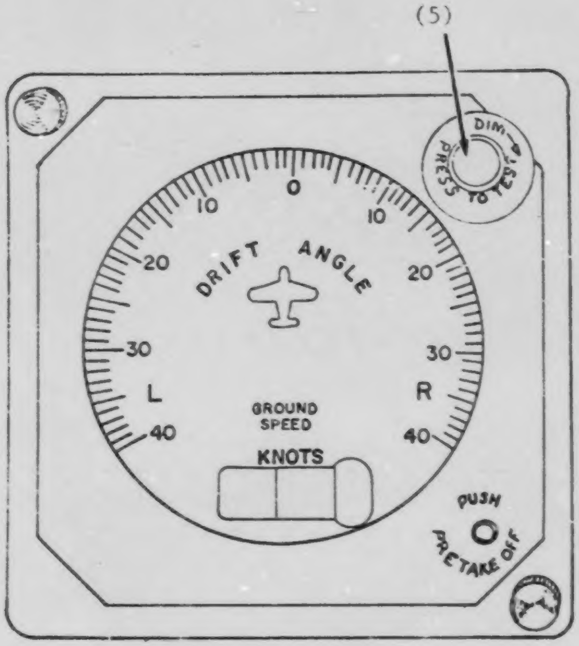
a. Set oscillator control unit POWER switch (1) to ON.

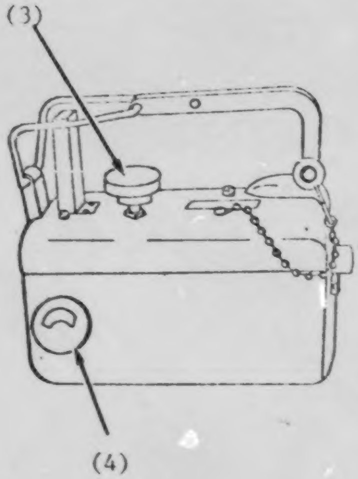
b. Set the GROUNDSPEED SELECTOR (2) to 200 knots.

c. Press tuning control (3) on r-f coupling unit and tune unit for maximum deflection on meter (4).

d. The radar set should lock on within 10 seconds after the r-f coupling unit is peaked. This is indicated by the memory warning light (5) (located on the indicator) going out.


(1)
FUSE
28V.DC .5A S.B.
115VAC
1A S.B.
1A S.B.
DOPPLER ON
OFF POWER
SIMULATOR ON
DRIFT LEFT RIGHT
DOPPLER
ANTENNA
OUTPUT
OSC MONITOR
GROUNDSPEED SELECTOR
280
240 DRIFT
320
200
400 2/3
400
500
620
750
KNOTS ± 2%
DOPPLER SIMULATOR
CMA 844A/T(H)
DRIFT ANGLE
GROUND SPEED
KNOTS
L
R
DIM
PRESS TO TEST
PUSH
PRETAKE OFF
(2)


(5)
DIM
PRESS TO TEST
0
10
20
30
40
DRIFT ANGLE
L
R
GROUND SPEED
KNOTS
PUSH
PRETAKE OFF


(3)
(4)

Step 5.

On Radar Set Control, set POWER switch (1) to SLEW.

Step 6.

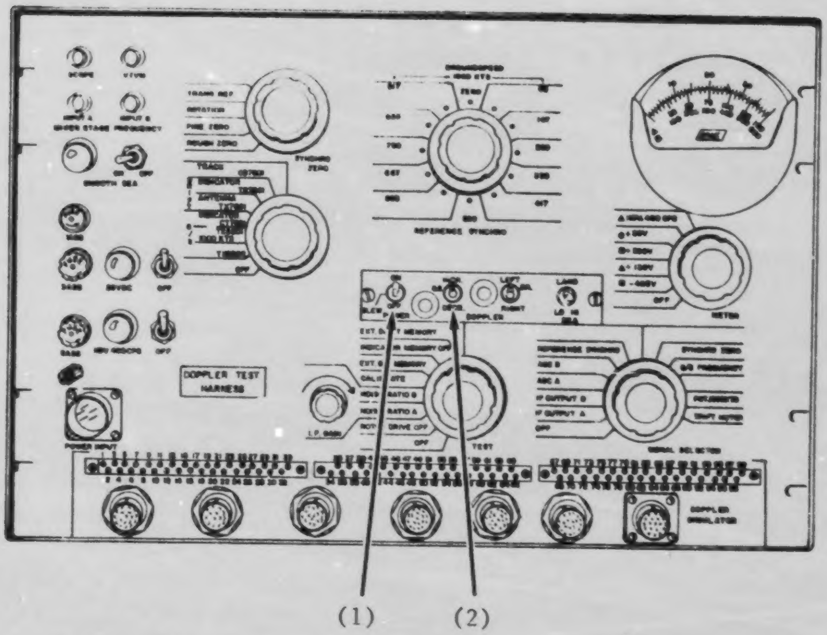
Operate G/S switch (2) on Radar Set Control to display groundspeed value on Indicator of within 10% of 240 knots.

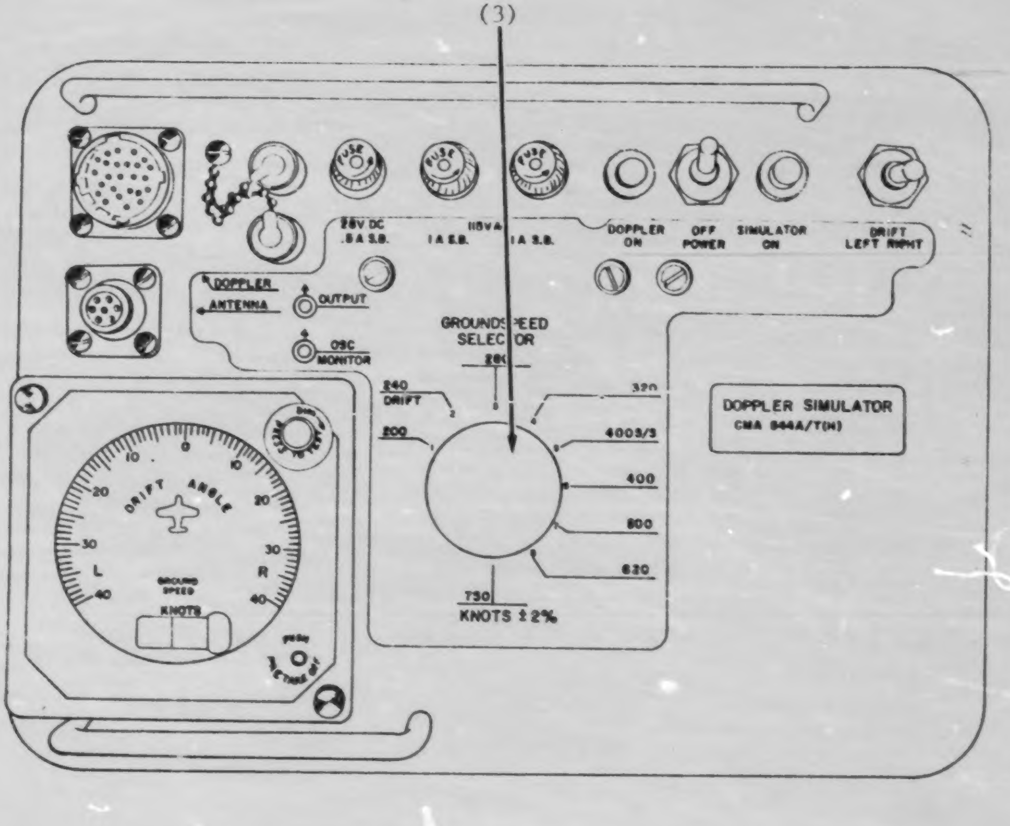
Step 7.

Advance GROUNDSPEED SELECTOR (3) on Doppler Simulator to 240 knots and allow radar to lock on. Time required for system "lock on" after advancing groundspeed from 200 to 240 knots must not exceed 20 seconds.

Step 8.

Repeat for each value of simulated groundspeed on Doppler Simulator.


DOPPLER TEST HARNESS
POWER INPUT
GROUNDSPEED
REFERENCE SYNCHRO
SYNCHRO ZERO
DOPPLER
TEST
SIGNAL SELECTOR
METER
DOPPLER SIMULATOR
(1)
(2)

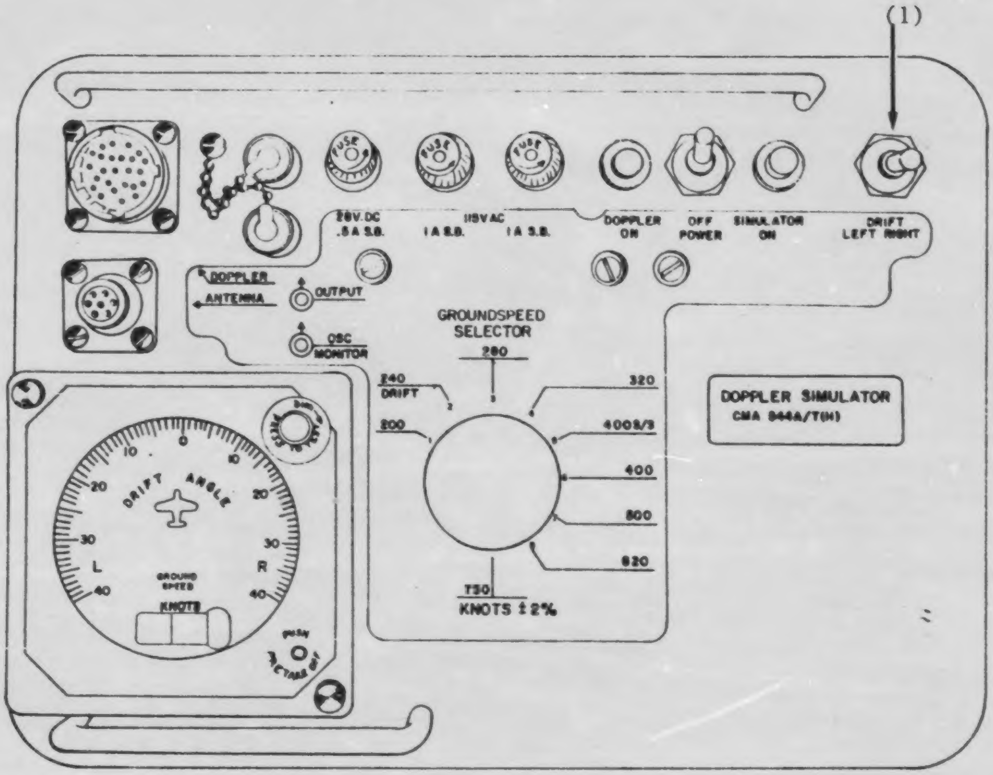

(3)
28V DC
.5 A S.B.
115VAC
1 A S.B.
1 A S.B.
DOPPLER ON
OFF POWER
SIMULATOR ON
DRIFT LEFT RIGHT
DOPPLER
ANTENNA
OUTPUT
OSC MONITOR
GROUNDSPEED SELECTOR
200
240 DRIFT
280
320
400S/S
400
600
620
750
KNOTS ± 2%
DOPPLER SIMULATOR
CMA 844A/T(H)
DRIFT ANGLE
10
0
10
20
20
30
30
L
R
40
40
GROUND SPEED
KNOTS

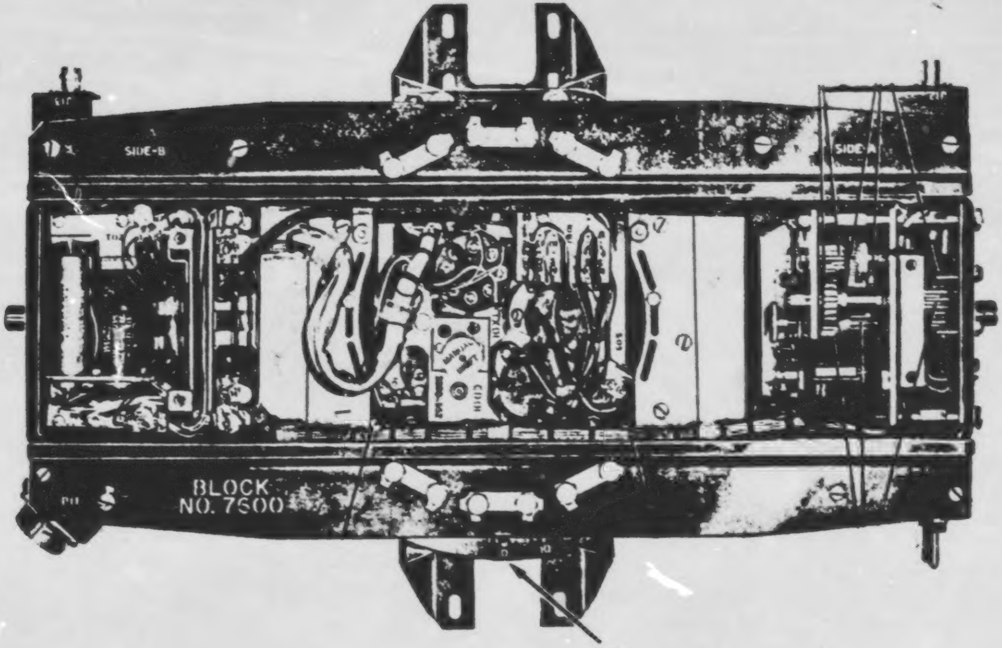
Step 9.

After the memory warning light goes out operate the simulator DRIFT switch (1) to the RIGHT. Time required for the antenna to swing through a 10 degree drift interval (2) must not exceed 20 seconds.

Step 10.

Repeat this test with the DRIFT switch set to the LEFT.


(1)
FUSE
FUSE
FUSE
28V.DC
.5A S.B.
115VAC
1A S.B.
1A S.B.
DOPPLER
ON
OFF
POWER
SIMULATOR
ON
DRIFT
LEFT RIGHT
DOPPLER
ANTENNA
OUTPUT
OSC
MONITOR
GROUNDSPEED
SELECTOR
280
240
DRIFT
200
320
400S/S
400
500
520
750
KNOTS ± 2%
DOPPLER SIMULATOR
CMA 844A/T(H)
DRIFT ANGLE
10
0
10
20
20
30
30
L
R
40
40
GROUND
SPEED
KNOTS
PUSH

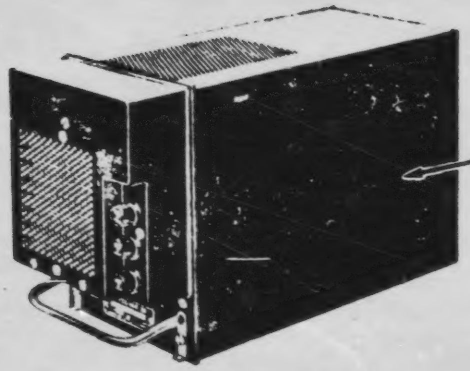

SIDE-B
SIDE-A
BLOCK
NO. 7600
(2)

PART VI - COMPUTER SET AN/ASN-35

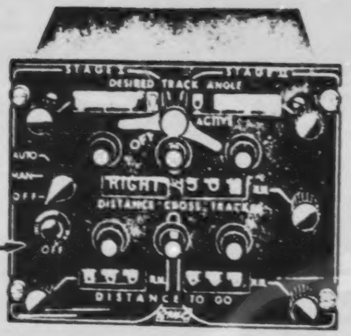
A. EQUIPMENT DESCRIPTION

The basic components of the Computer Set AN/ASN-35 are:

(1) Computer CP-622/ASN-35
(2) Control-Indicator C-3748A/ASN-35
(3) Air Navigation Multiple Indicator ID-939A/ASN-35
(4) Control Indicator, Auxiliary Cross Track C-3749A/ASN-35.

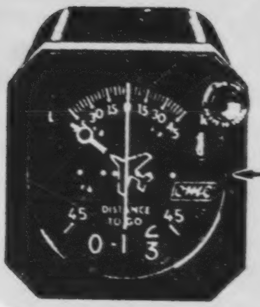


(1)



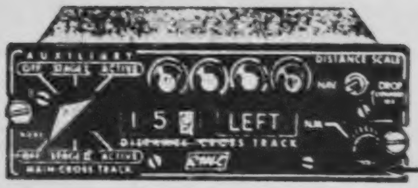
(2)

STAGE I
STAGE II
DESIRED TRACK ANGLE
ACTIVE
OFF
AUTO
MAN
OFF
RIGHT
N.M.
DISTANCE CROSS TRACK
OFF
N.M.
N.M.
DISTANCE TO GO



(3)

45
15
30
15
30
45
DISTANCE TO GO
45
45
0-1 3

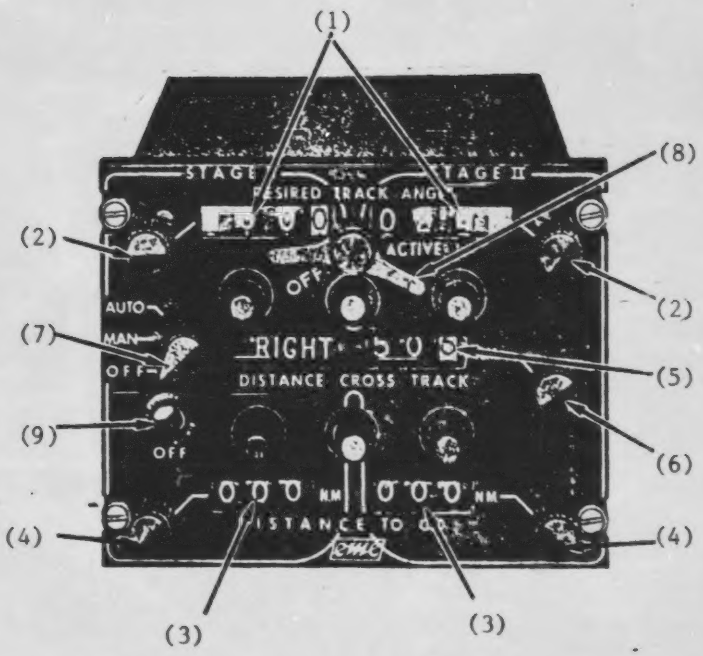


(4)

AUXILIARY
OFF
STAGE I
ACTIVE
DISTANCE SCALE
NAV
DROP
1 5
LEFT
N.M.
DISTANCE CROSS TRACK
OFF
STAGE II
ACTIVE
MAIN CROSS TRACK

B. CONTROLS AND INDICATORS

1. DESIRED TRACK ANGLE (STAGE I and STAGE II)
   4-digit manually operated counter. (1) Provided a digital readout of desired track angle in degrees and tenths of a degree.
2. DESIRED TRACK ANGLE (STAGE I and STAGE II).
   Manually preset control. (2) Used to set desired track angle.
3. DISTANCE TO GO (STAGE I and STAGE II)
   3-digit electromagnet-operated counter. (3)
   Provides a digital readout of distance to go in nautical miles.
4. DISTANCE TO GO (STAGE I and STAGE II).
   Manually preset control. (4) Used to set distance to go.
5. DISTANCE CROSS TRACK. Electromagnet-operated counter with two banks of three digits and a directional flag. (5) Provides a digital readout of distance cross track in nautical miles.
6. DISTANCE CROSS TRACK.
   Manually preset control. (6) Used to set distance cross track.
7. AUTO-MAN-OFF (SW5401). Three-position switch. (7)
   OFF: Power off position
   MAN: Provides for manual stage switching in conjunction with ACTIVE-OFF switch.
   AUTO: Provides automatic stage switching when DISTANCE TO GO indicator reads zero miles.
8. ACTIVE-OFF (SW5402) Two position switch. (8) Selects and indicates active stage.
9. OFF indicator (DS5401) Lamp. (9) Warning light; when lit, indicates equipment failure.


(1)
(8)
(2)
(2)
(7)
(5)
(9)
(6)
(4)
(4)
(3)
(3)
STAGE I
STAGE II
DESIRED TRACK ANGLE
ACTIVE
OFF
AUTO
MAN
OFF
RIGHT 5 0 5
DISTANCE CROSS TRACK
OFF
0 0 0 NM
0 0 0 NM
DISTANCE TO GO
emc

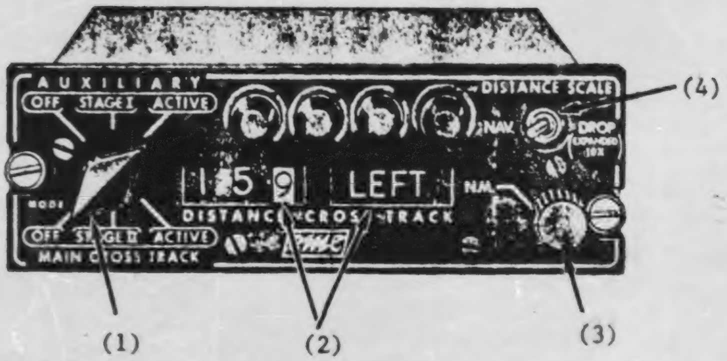
B. CONTROLS AND INDICATORS (Con't

1. MODE (SW4401) Single-pole 3-position switch. (1)
   AUXILIARY OFF: The unit is inactive.
   AUXILIARY STAGE I: The unit counts distance to right or left of the desired track when STAGE I of the control-indicator is active. However, the cross track counter of the control-indicator does not count. When STAGE II of the control-indicator is active, the auxiliary cross track control indicator is not active.
   AUXILIARY ACTIVE: The unit is active regardless of which stage of the control-indicator is active.

2. DISTANCE CROSS TRACK. Electromagnet operated counter with two banks of 3 digits and a directional flag. (2) Provides a digital readout of cross track distance up to 99.9 nautical miles.

3. DISTANCE CROSS TRACK. Manual preset control. (3) Used to set cross track distance.

4. DISTANCE SCALE (SW4402). Single-pole 2-position switch. (4)
   NAV: Cross track reading displayed in miles and tenths.
   DROP: Cross track reading in miles, tenths and hundredths.


AUXILIARY
OFF
STAGE I
ACTIVE
MODE
OFF
STAGE II
ACTIVE
MAIN CROSS TRACK
DISTANCE SCALE
NAV.
DROP
EXPANDED 10X
N.M.
LEFT
DISTANCE
CROSS TRACK
(4)
(1)
(2)
(3)

B. CONTROLS AND INDICATORS (Con't)

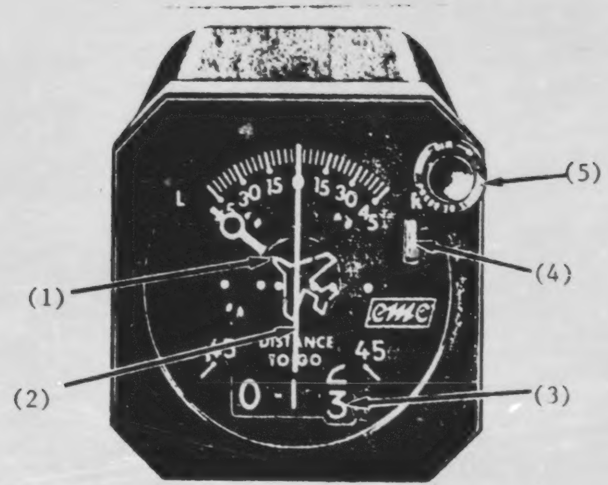
1. Track error angle pointer. Pointer driven by a synchro. (1)
   a. Indicates track error angle against a scale calibrated in degrees.
   b. Indicates aircraft track relative to desired track, by position of model aircraft relative to vertical bar.(2)

2. Desired track and distance cross track indicator. Vertical bar driven by meter movement. (2) Indicates cross track distance (left or right) from center, measured against horizontal row of dots.

3. DISTANCE TO GO. 3-digit counter driven by motor. (3) Indicates distance to go in nautical miles up to a maximum of 999 miles, or 99.9 miles if the auxiliary cross track control-indicator is in the DROP position.

4. ON-OFF Flag. Relay activated shutter. (4) Indicates power failure when in the OFF position.

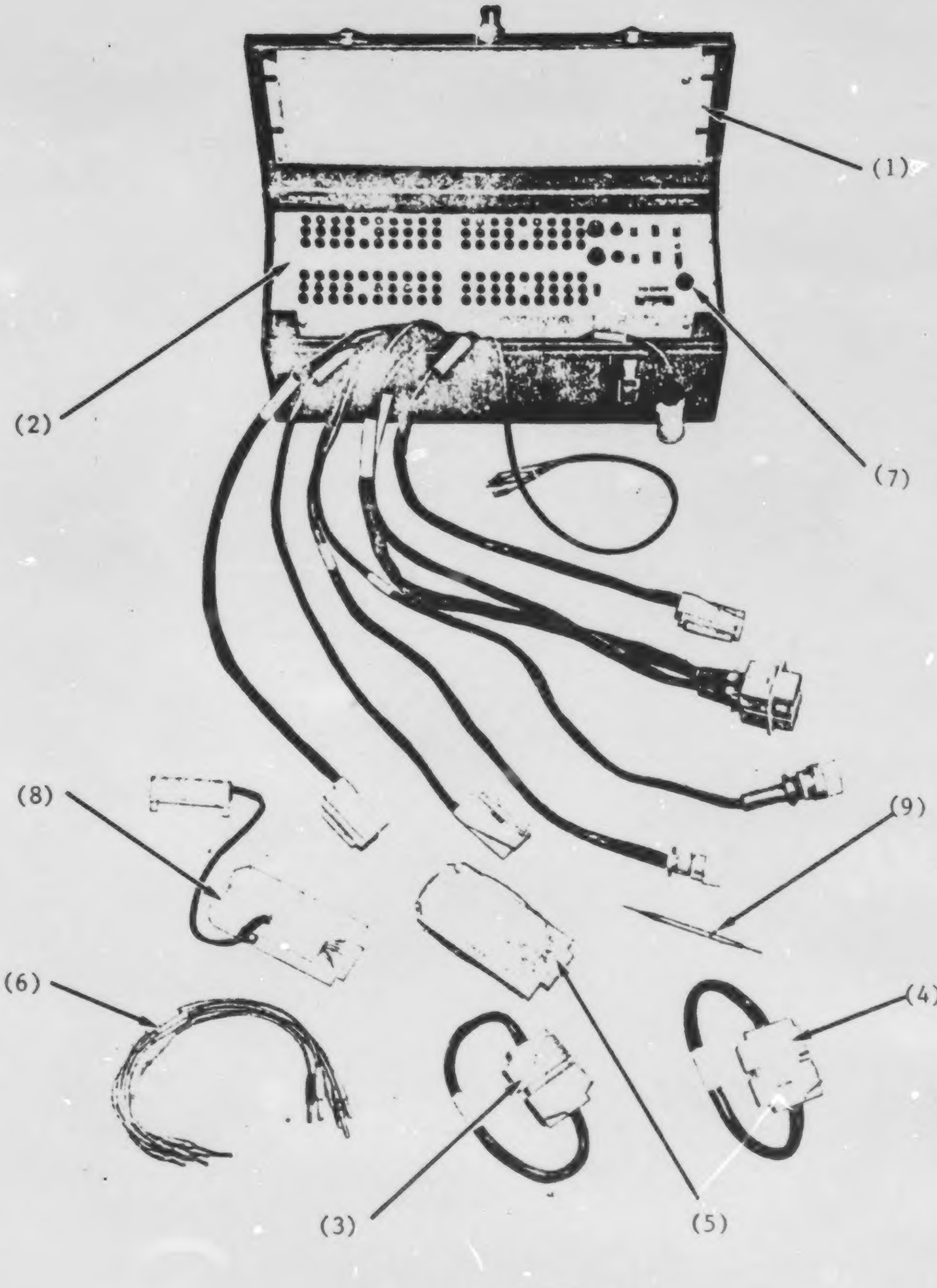
5. Alert Lamp (DS01) Lamp (5) Lamp lights when distance to go reaches 10 miles. Lamp incorporates press-to-test and dimming facilities.


(5)
L
45
30
15
15
30
45
R
(4)
(1)
emc
DISTANCE
TO GO
45
45
(2)
0-1 3
(3)

C. SPECIAL TEST EQUIPMENT - COMPUTER TEST HARNESS CMA-549/T(H)

The Computer Test Harness provides facilities for bench testing of the computer set. The Computer Test Harness duplicates the aircraft wiring for interconnection of all components of the computer set. It consists of;

(1) Carrying Case
(2) Computer Test Harness
(3) Extension Cable (37-pin)
(4) Extension Cable (50-pin)
(5) Resolver Balancing Jig
(6) Terminal Board Patch Cable
(7) Heading Track Simulator
(8) Printed-Circuit Board Extension
(9) Tool Assembly

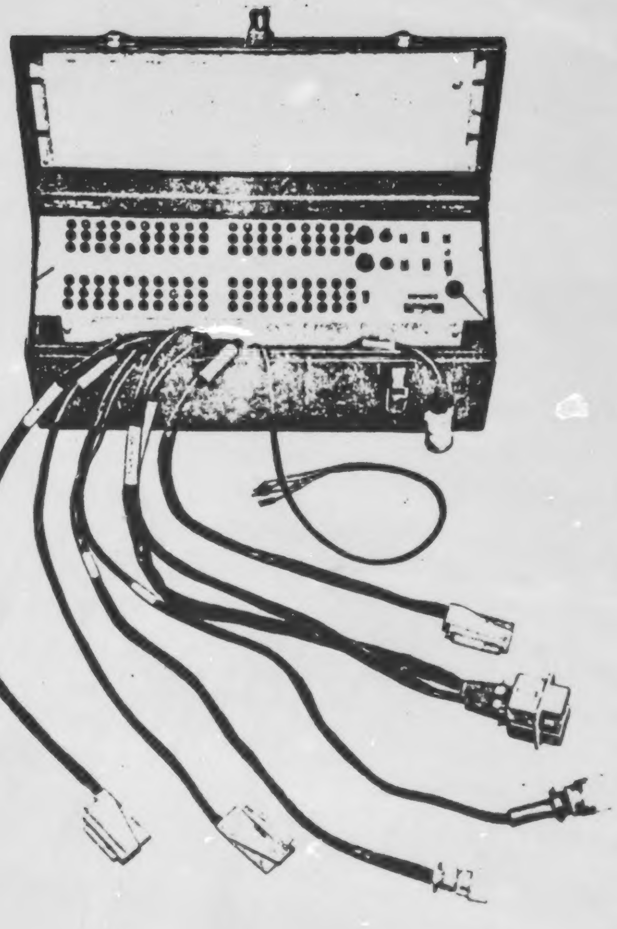

(1)
(2)
(7)
(8)
(9)
(6)
(4)
(3)
(5)

PART VII- COMPUTER BENCH TEST SET-UP

Step 1.

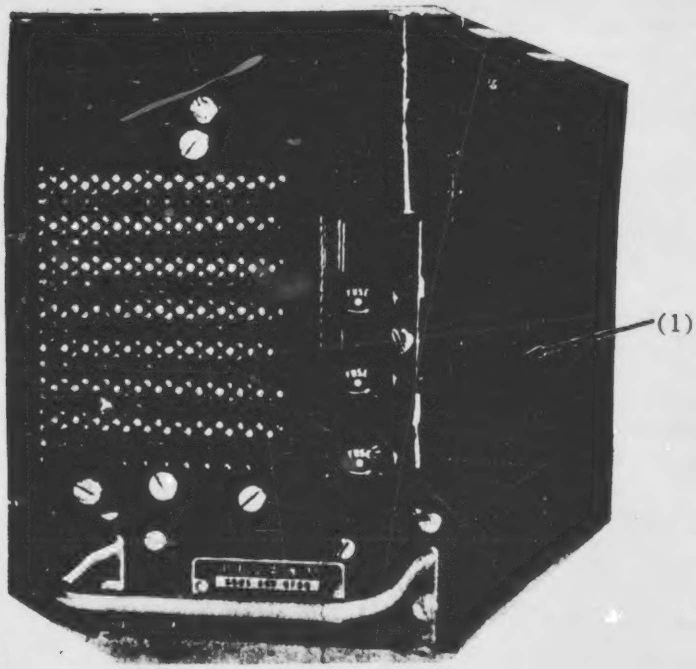
There are nine cables connected to the bottom of the panel of the test harness. These cables are identified on the rear panel, from left to right, as follows:

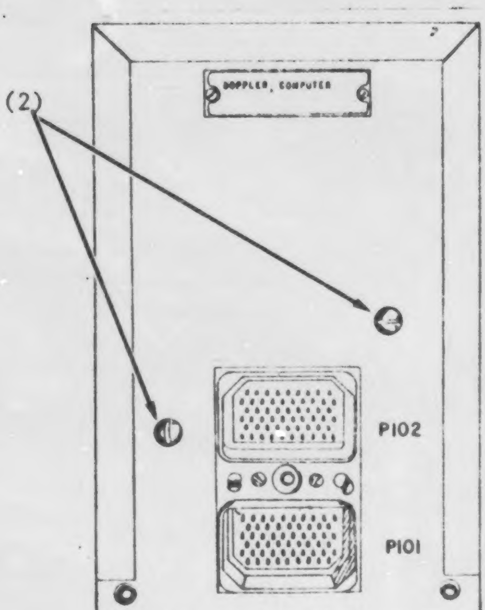
(1) DOPPLER
(2) INDICATOR
(3) CONTROLLER TOP
(4) CONTROLLER BOTTOM
(5) COMPUTER BOTTOM
(6) COMPUTER TOP
(7) AUXILIARY CROSS TRACK
(8) POWER PATCH
(9) POWER



Step 2.

Remove dust cover (1) from Computer. Unsnap two dzus fasteners (2). Slide cover off.


(1)


DOPPLER COMPUTER
(2)
P102
P101

Step 3.

The first (DOPPLER) and eighth (POWER PATCH) cables are not used in the bench test setup. The remaining seven cables are used.

Connect INDICATOR cable (1) of Computer Test Harness to plug P5501 (2) of air navigation multiple indicator.

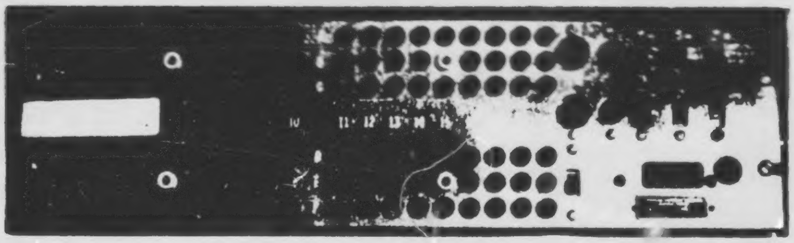
Connect CONTROLLER TOP cable (3) to plug P5402 (4) of control-indicator.

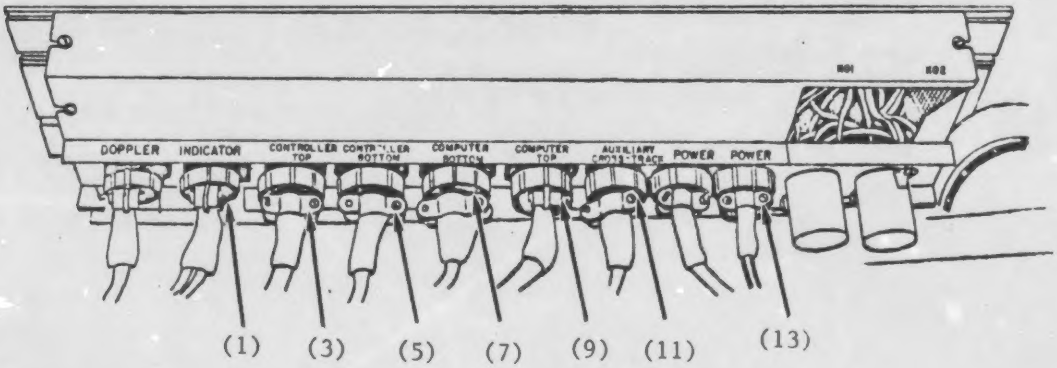
Connect CONTROLLER BOTTOM cable (5) to plug P5401 (6) of control-indicator.

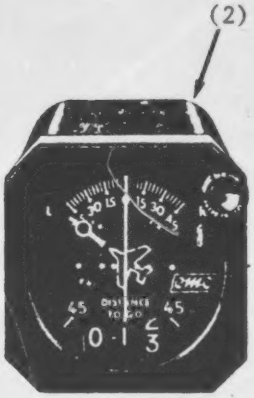
Connect Double connector of COMPUTER BOTTOM and COMPUTER TOP cables to plugs P101 and P102 of computer.

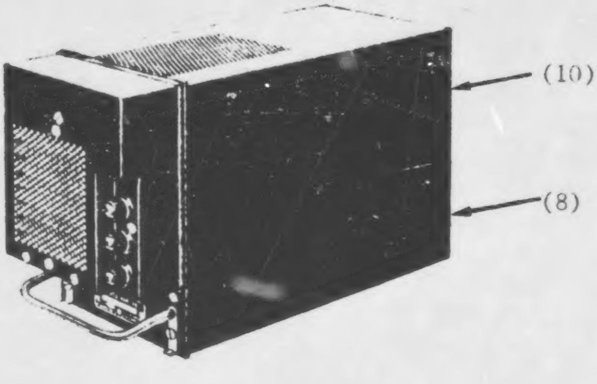
Connect AUXILIARY CROSS TRACK cable (11) to plug P4401 of auxiliary cross track control-indicator (12).

Connect POWER cable (13) to power panel providing 115 volts ac, 400 cps, 95 volt amperes, and 28 volts dc, 60 watts to the test harness and computer set. Connect green and white wires to 115 VAC and red and black wires to 28 VDC source. (Black wire connected to ground).

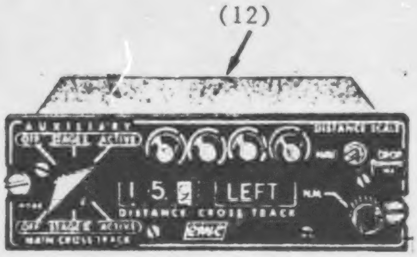



DOPPLER
INDICATOR
CONTROLLER TOP
CONTROLLER BOTTOM
COMPUTER BOTTOM
COMPUTER TOP
AUXILIARY CROSS-TRACK
POWER
POWER
(1)
(3)
(5)
(7)
(9)
(11)
(13)


(2)
DISTANCE TO GO
45
45
0 1 3


(10)
(8)

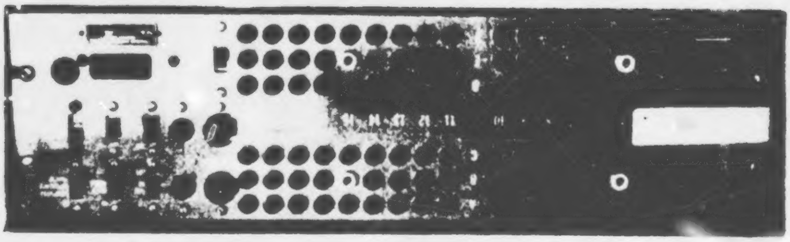
(4)
(6)
STAGE I
STAGE II
DESIRED TRACK ANGLE
ACTIVE
OFF
AUTO
MAN
RIGHT 5 0 9
DISTANCE CROSS TRACK
DISTANCE TO GO


(12)
AUXILIARY
OFF STAGE I ACTIVE
DISTANCE SCALE
1 5 LEFT
DISTANCE CROSS TRACK
OFF STAGE II ACTIVE
MAIN CROSS TRACK

Step 3.

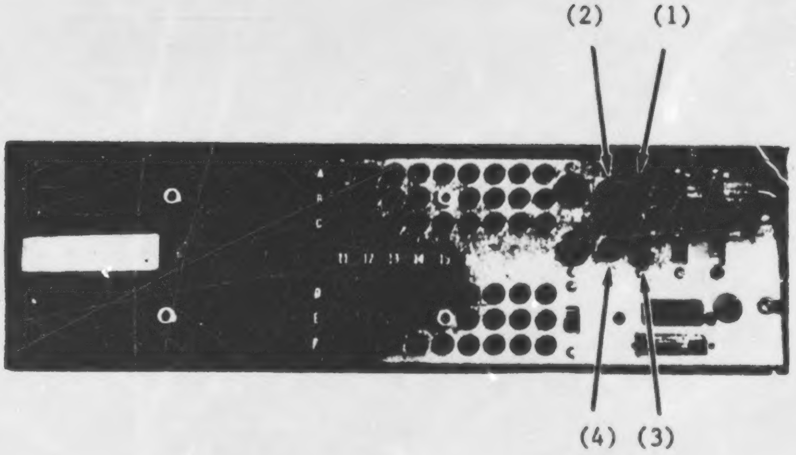
On the Computer Test Harness panel are six rows (marked A, B, C, D, E, and F) of 19 terminals per row (marked 1 to 19) which are used as test points. For the incoming power to be distributed as required, short the following test terminals, using the five patch cables provided.

D-15 to E-7
D-16 to E-6
B-5 to B-15
E-11 to E-16
B-4 to E-10



Step 4.

Turn 115 VAC power switch (1) to ON. Pilot light (2) indicates presence of power. Turn 28 VDC power switch (3) to ON. Pilot light (4) indicates presence of power.


(2)
(1)
A
B
C
D
E
F
(4)
(3)

Step 5.

Set the HEADING TRACK SIMULATOR switch (1) to INT.

Step 6.

Position the DRIFT ANGLE switch (2) to OUT.

Step 7.

Position the 26 VAC, EXC switch (3) to INT.

Step 8.

Position the terrain switch (4) to the LAND, SEA, or SS position as required.

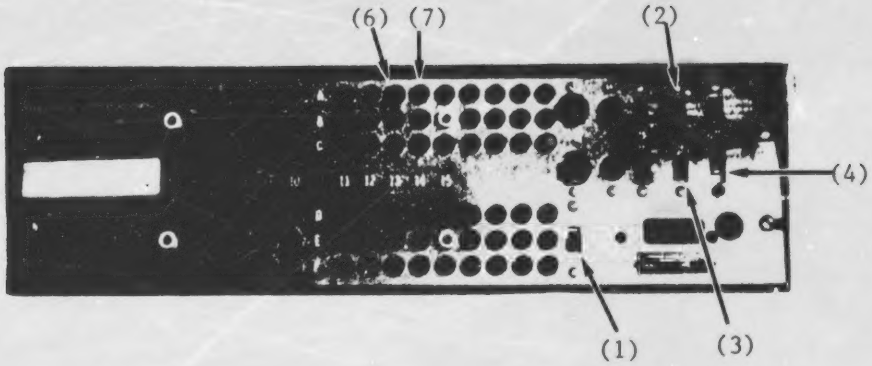
Step 9.

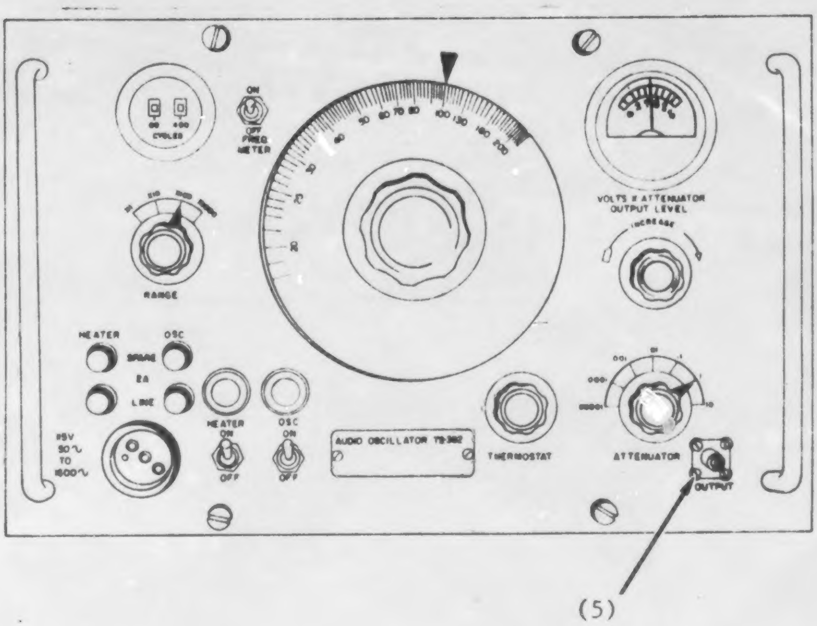
Connect the Audio Oscillator output (5) to test points A-13 (6), A-14 (7) on the test harness.

Step 10.

Set the Audio Oscillator to 10 khz with an output of 5 volts rms as illustrated.

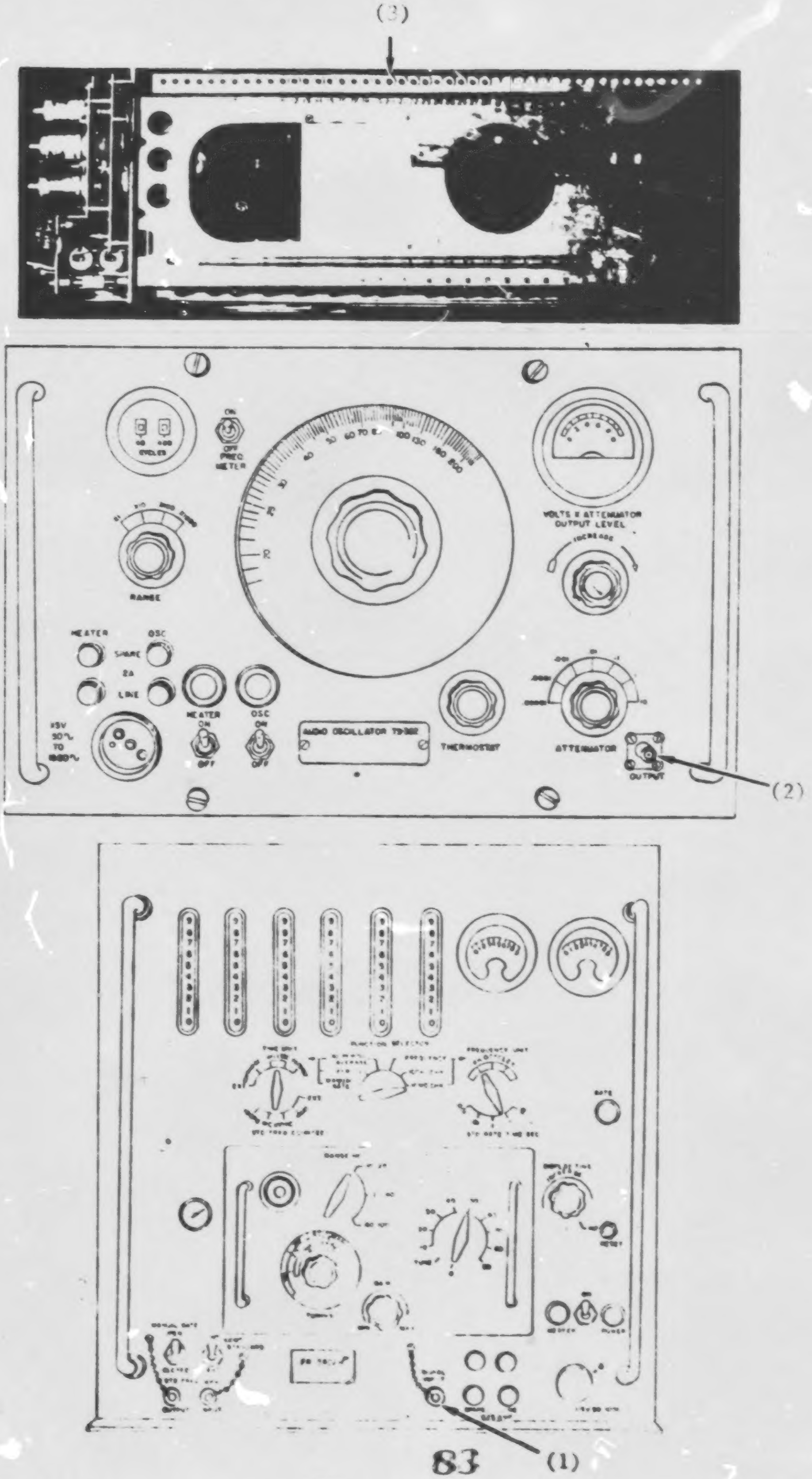
a. RANGE to X100
b. FREQUENCY DIAL to 100
c. ATTENUATOR to 1
d. METER set to read 5 by adjusting VOLTS X ATTENUATOR OUTPUT LEVEL control.


(6)
(7)
(2)
(4)
(1)
(3)


CYCLES
ON
OFF
FREQ. METER
RANGE
VOLTS X ATTENUATOR OUTPUT LEVEL
INCREASE
HEATER
OSC
SPARE
EA
LINE
115V 50~ TO 1600~
HEATER ON OFF
OSC ON OFF
AUDIO OSCILLATOR TS-382
THERMOSTAT
ATTENUATOR
OUTPUT
(5)

Step 11.

Connect the Frequency Meter Signal Input (1) to the Audio Oscillator output (2) and to test point 20 (3) on the Computer.


(3)
ON
OFF
FREQ METER
CYCLES
RANGE
VOLTS X ATTENUATOR
OUTPUT LEVEL
INCREASE
HEATER
OSC
SPARE
2A
LINE
HEATER
ON
OFF
OSC
ON
OFF
115V
50~
TO
1600~
AUDIO OSCILLATOR TS-382
THERMOSTAT
ATTENUATOR
OUTPUT
(2)
TIME UNIT
FUNCTION SELECTOR
FREQUENCY UNIT
GATE
RESET
POWER
(1)

PART VIII - COMPUTER SET CHECKOUT

Step 1.

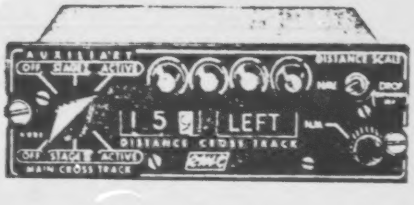
Set Heading Track Simulator to 000.0 degrees. Ensure that Audio Oscillator is off. On the Auxiliary Cross Track Control-Indicator, set controls as follows:

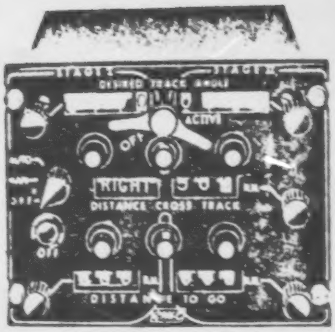
a. DISTANCE CROSS TRACK to 00.0 miles.
b. DISTANCE SCALE switch to NAV.
c. MODE switch to AUXILIARY OFF.

On the Control-Indicator, set controls as follows:

a. DESIRED TRACK ANGLE 000.0 degrees.
b. DISTANCE CROSS TRACK to 100.0 miles.
c. AUTO-MAN-OFF to MAN.

Observe warning light in control-indicator. Warning light should be on.


AUXILIARY
OFF
STAGE
ACTIVE
DISTANCE SCALE
DROP
N.M.
15
LEFT
DISTANCE CROSS TRACK
OFF
STAGE
ACTIVE
MAIN CROSS TRACK


STAGE
STAGE
DESIRED TRACK ANGLE
ACTIVE
OFF
RIGHT
DISTANCE CROSS TRACK
N.M.
OFF
DISTANCE TO GO

Step 2.

Set Audio Oscillator to 10 khz at 7 volts. Observe DISTANCE TO GO counter in control indicator. Warning light goes out and DISTANCE TO GO count increases.

Step 3.

Set DESIRED TRACK ANGLE to 180.0 degrees. Observe DISTANCE TO GO counter in control indicator. DISTANCE TO GO count increases.

Step 4.

Observe DISTANCE TO GO counter on air navigation multiple indicator. DISTANCE TO GO count decreases.

Step 5.

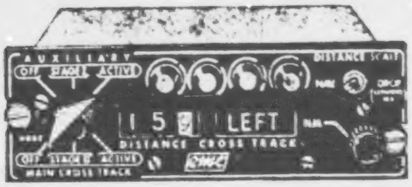
Check that track error angle on air navigation multiple indicator reads zero degrees.

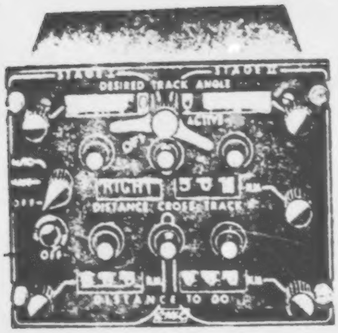
Step 6.

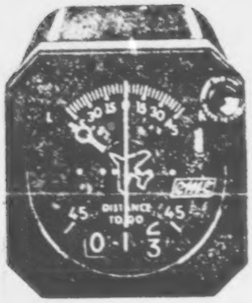
Set DESIRED TRACK ANGLE to 315.0 degrees. Check that DISTANCE CROSS TRACK counter of control-indicator count increases to the right.

Step 7.

Place MODE switch of auxiliary cross track control-indicator to AUXILIARY ACTIVE position. Observe that DISTANCE CROSS TRACK counter on auxiliary cross track control-indicator counts to right.


AUXILIARY
OFF STAGE I ACTIVE
DISTANCE SCALE
15 LEFT
DISTANCE CROSS TRACK
OFF STAGE II ACTIVE
MAIN CROSS TRACK


STAGE I
STAGE II
DESIRED TRACK ANGLE
OFF
ACTIVE
RIGHT
DISTANCE CROSS TRACK
DISTANCE TO GO


30 15
15 30
45
DISTANCE TO GO
45
0 1 3

Step 8.

Observe that desired track vertical bar on Air Navigation Multiple Indicator moves to left.

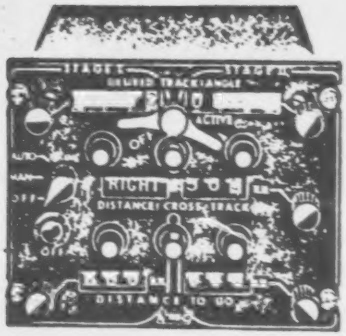
Step 9.

Set controls as follows:

a. AUTO-MAN-OFF switch to AUTO
b. DISTANCE TO GO (STAGE I) counter to 10 miles
c. DISTANCE TO GO (STAGE II) counter to 10 miles

Observe control indicator. Check that when DISTANCE TO GO (STAGE I) counter reaches 0 miles STAGE II counter begins to operate.

45
DISTANCE TO GO
45


STAGE I
STAGE II
DESIRED TRACK ANGLE
ACTIVE
OFF
AUTO
MAN
OFF
RIGHT
DISTANCE CROSS-TRACK
OFF
DISTANCE TO GO

BLANK

SECTION B

TEST ADMINISTRATOR INSTRUCTIONS

TEST ADMINISTRATOR INSTRUCTIONS

TEST

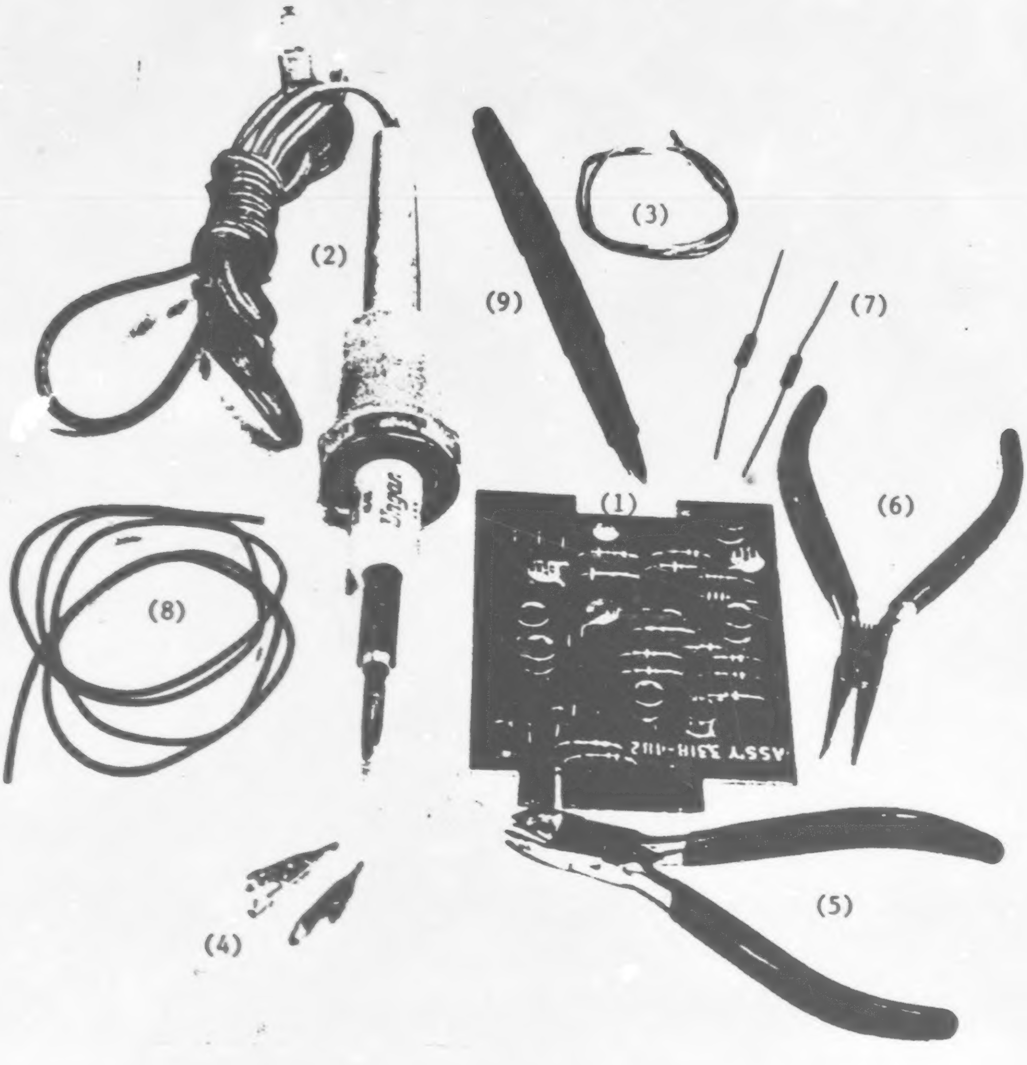
PT-1, Circuit Board Soldering

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Plug-in assembly board, (1), 3318-482
b. Forty watt (±5) soldering iron (2)
c. 60/40 rosin-core solder (3)
d. Heat sinks (4)
e. Diagonal pliers (5)
f. Needle-nose pliers (6)
g. Solid color resistors (7)
h. Roll of thin gauge stranded wire (8)
i. Grease pencil or felt pen (9)


(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
ASSY 331H-1112

PT-1

PRE-TEST SET-UP

a. Set up each test station with a plug-in assembly board and two solid color resistors.

b. On each assembly board, mark two resistors for replacement. Use a grease pencil or felt pen. See opposite page.

TEST ADMINISTRATION PROCEDURES

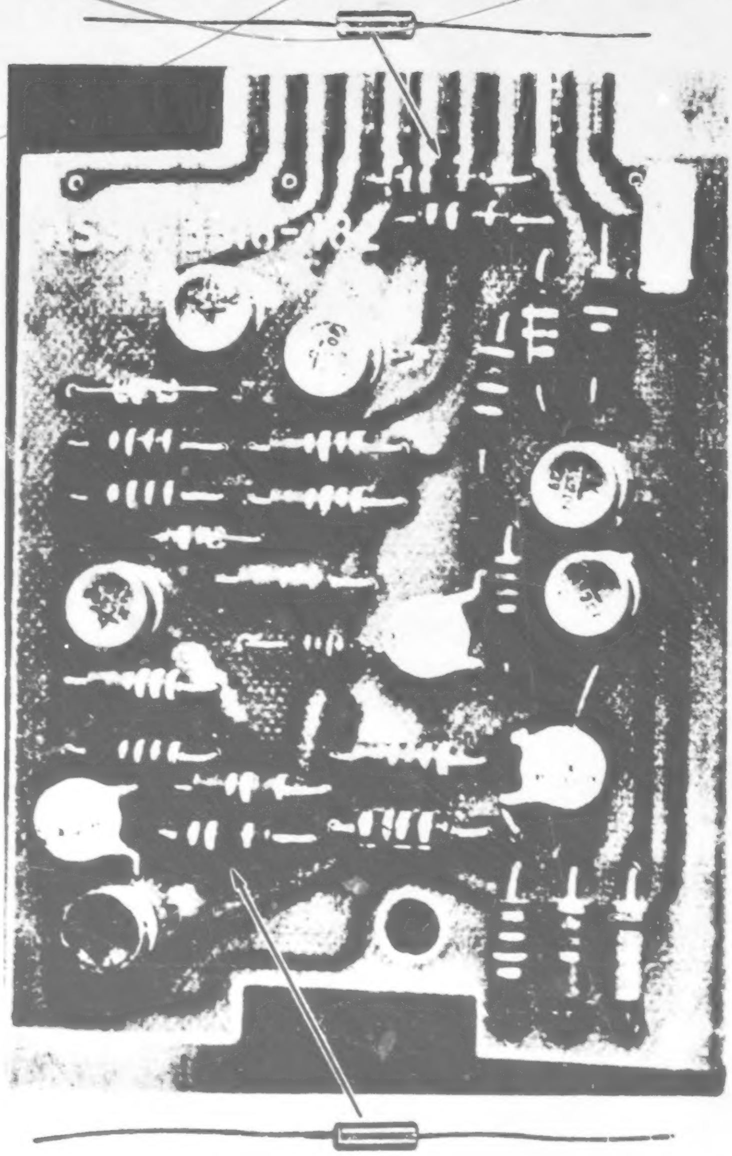
a. Have the technician read his instructions for Test PT-1 and enter his test identification number on his Performance Evaluation Sheet.

b. Note the time and instruct the technician to begin the test.

PERFORMANCE EVALUATION PROCEDURES

a. When the technician has completed the replacement, inspect his work.

PT-1

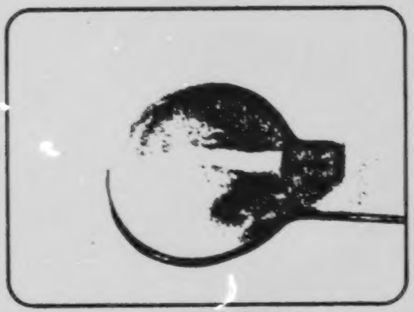


b. Compare the technician's soldering with the standard shown on the opposite page.

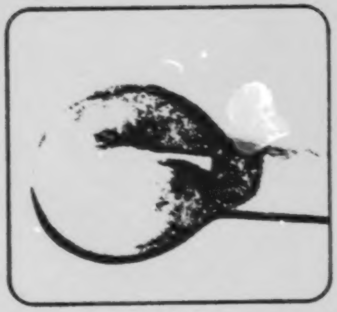
c. Both leads of a given resistor must be properly soldered for the resistor to be acceptable.

d. Evaluate the soldering on each resistor and enter the results on the technician's Performance Evaluation Sheet.

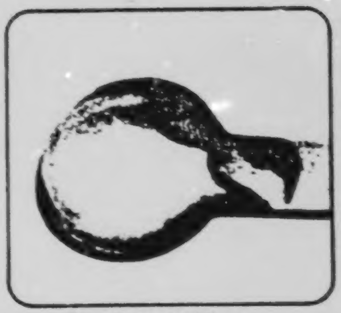
e. Make sure that the technician's identification number is on the Performance Evaluation Sheet.



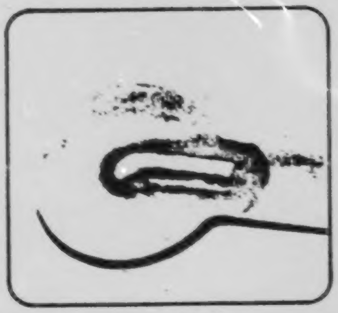
PREFERRED
SOLDER



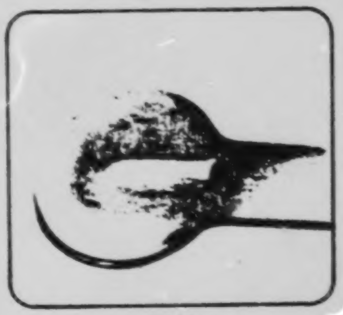
Acceptable
Maximum
Solder



Unacceptable
Excessive
Solder



Unacceptable
Insufficient
Solder



Acceptable
Minimum
Solder

TEST ADMINISTRATOR INSTRUCTIONS

TEST

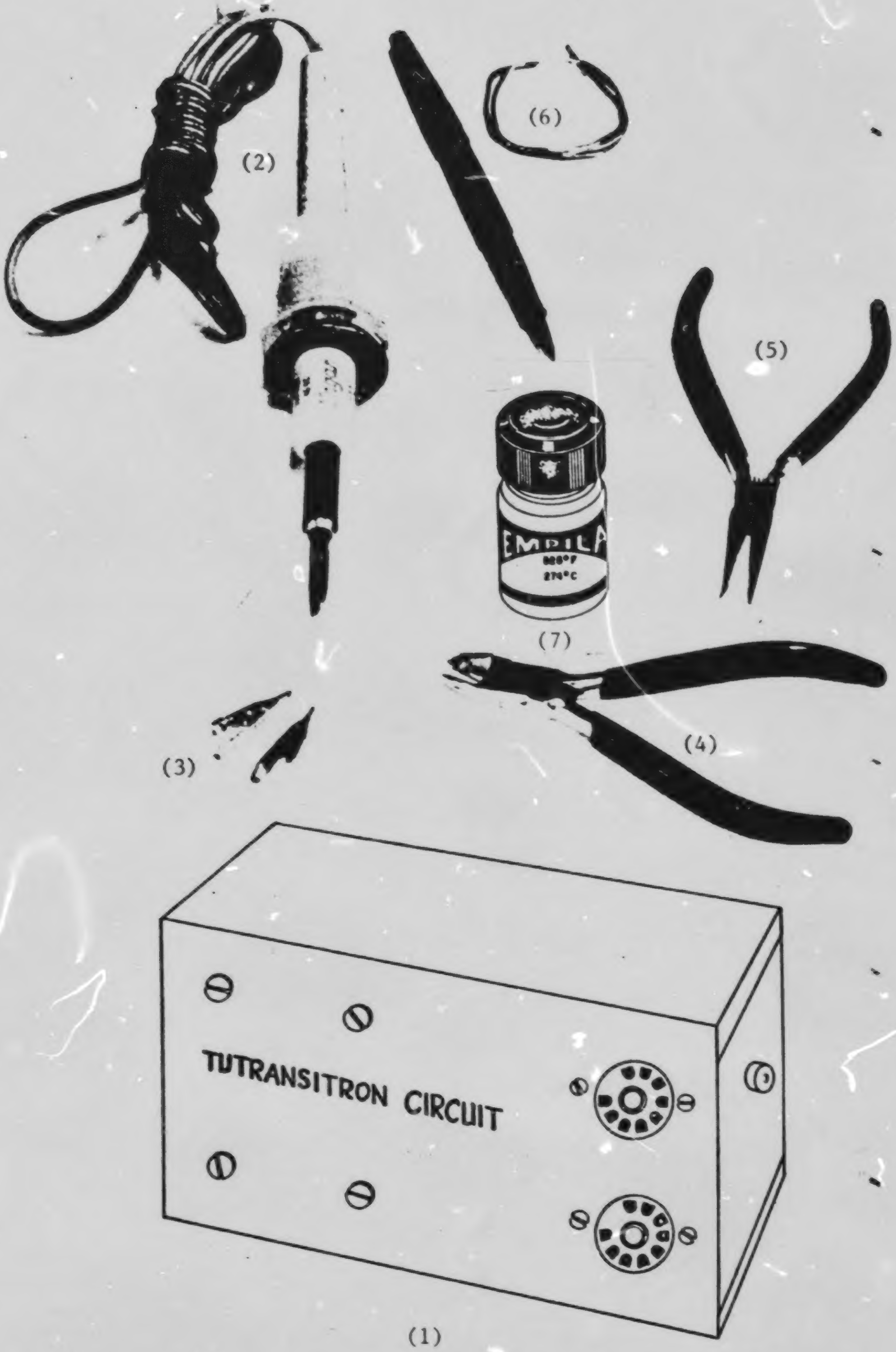
PT-2, Electronic Piece/Part Removal and Replacement

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Test soldering box (1) (Tutransitron Circuit)
b. 40 watt (± 5) soldering iron (2)
c. Heat sinks (3)
d. Diagonal pliers (4)
e. Needle-nose pliers (5)
f. 60/40 rosin-core solder (6)
g. Replacement parts kit
h. Circuit schematic diagram
i. Transistor configuration chart
j. Heat-sensitive dressing (7)


(2)
(6)
(5)
EMPILA
600°F
274°C
(7)
(3)
(4)
TUTRANSITRON CIRCUIT
(1)

PT-2

PRE-TEST SET-UP

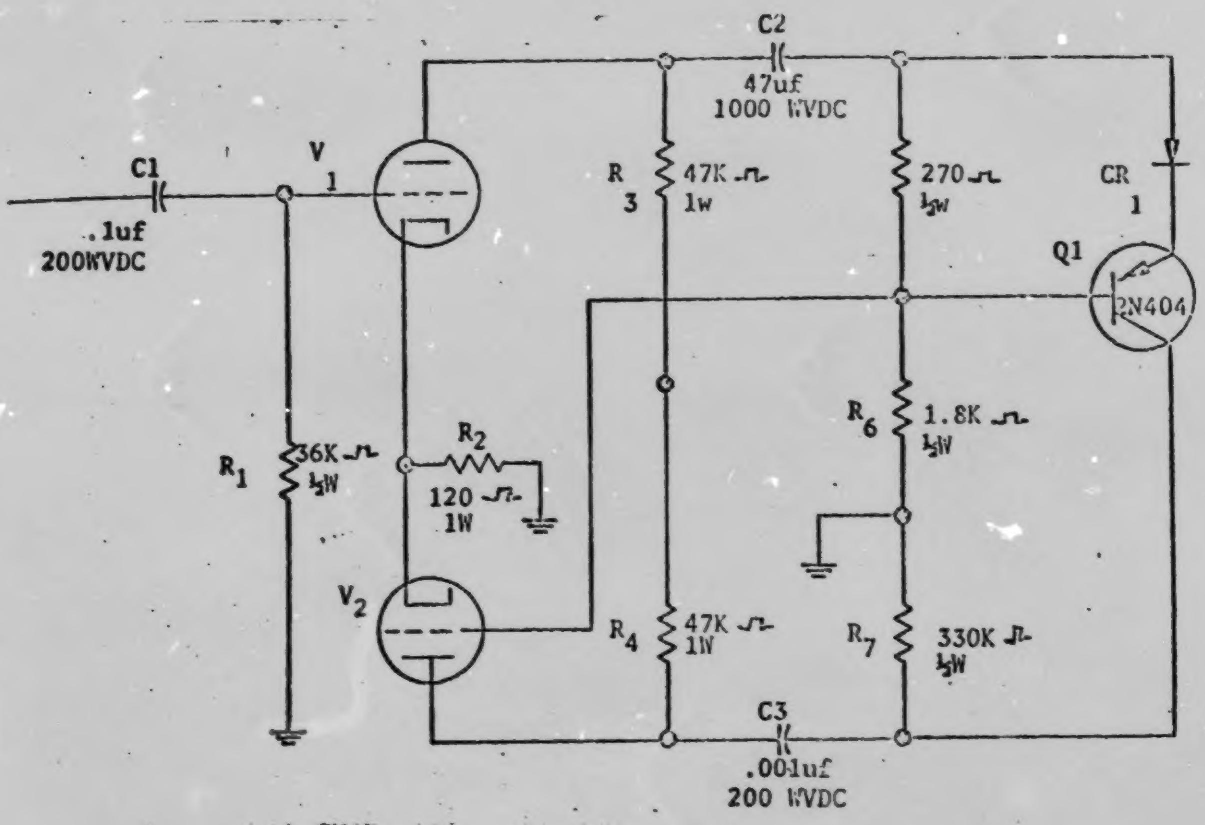
a. There are four different versions of this test. You have a supply of the Instructions for each version.

b. Each technician is to take a different version of the test than the person immediately before him.

c. When a technician has properly completed one version of the test, the circuit is in the proper configuration for the succeeding version to be administered.

d. On the opposite page is a picture of the circuit in its starting configuration for Form 1 of the test.

e. Before each administration, check the circuit to insure that the parts called out for removal by the instructions are in the circuit.


C1
.1uf
200WVDC
V
1
C2
47uf
1000 WVDC
R
3
47K Ω
1w
270 Ω
½W
CR
1
Q1
2N404
R1
36K Ω
½W
R2
120 Ω
1W
R6
1.8K Ω
½W
V2
R4
47K Ω
1W
R7
330K Ω
½W
C3
.001uf
200 WVDC

TUTRANSITRON, SCHEMATIC DIAGRAM

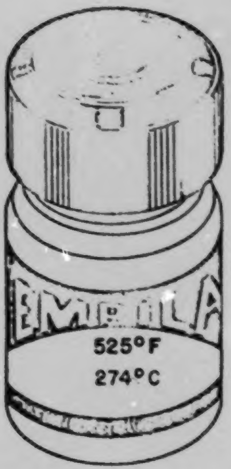
f. Apply the heat-sensitive dressing to any leads that do not have it on them. See picture on opposite page.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions for Test PT-2 and enter test identification number on Performance Evaluation Sheet.

b. Hand out the Tutransitron Circuit, the specific modification instructions and schematic, and the replacement parts kit.

c. Note the time and instruct the technician to begin the test.


525°F
274°C

PT-2

PERFORMANCE EVALUATION PROCEDURES

a. When the technician has completed the circuit modifications, examine his work.

b. Compare his work to his instructions and then complete his Performance Evaluation Sheet as follows:

1. Was the proper part installed?

   If so, place a checkmark in the box labled "Proper Component".

2. Was the component installed in the proper location?

   If so, place a checkmark in the box labeled "Proper Position".

3. Was the part installed with the poles in the proper position?

4. Did the heat-sensitive dressing on the leads liquify due to too much heat?

   If not, place a checkmark in the box labeled "H" (for heat).

5. Was the proper quantity of solder applied?

If so, place a checkmark in the box labeled "Solder".

POST-TEST RECOVERY

a. If the technician has installed any improper components, or installed any in the wrong position, have him correct his error so that the circuit is in the proper configuration for the next administration of the test.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

GE-1, 1890M Transistor Tester

TIME ALLOTTED

30 minutes

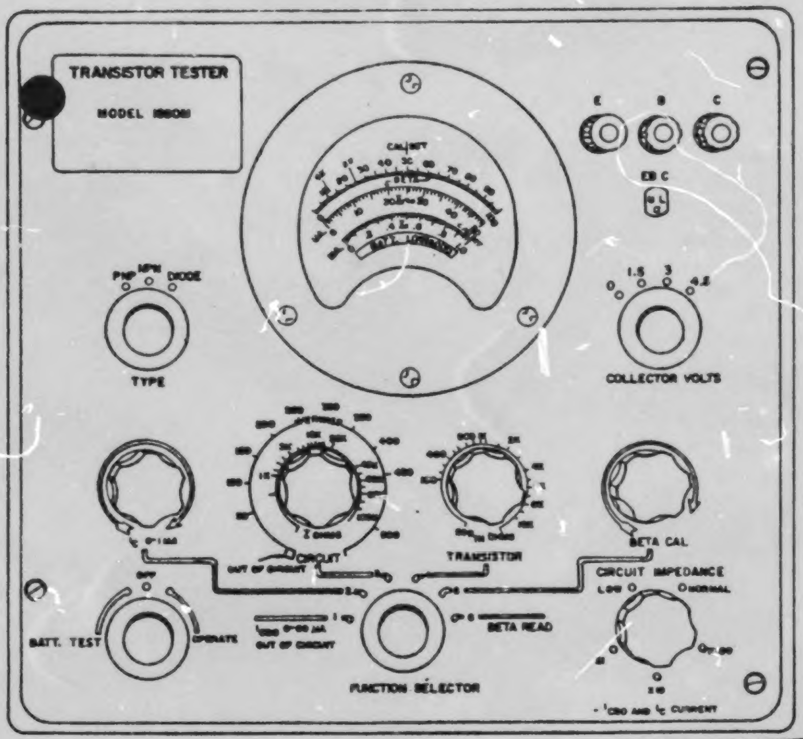
SUPPORT MATERIALS REQUIRED

a. 1890M Transistor Tester (1)

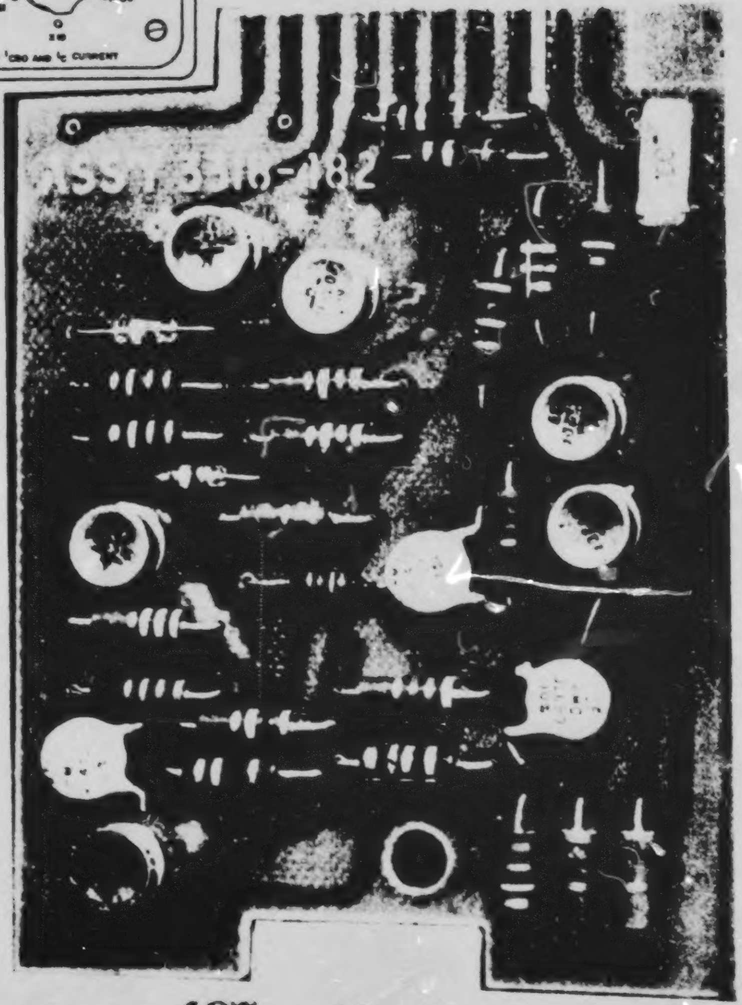
b. Instruction Manual for 1890M

c. Transistor Reference Chart

d. Circuit Board Assembly (2) 3318-482 (forms 1, 2, & 3)


TRANSISTOR TESTER
MODEL
E
B
C
PNP
NPN
DIODE
TYPE
1.5
3
4.5
COLLECTOR VOLTS
CIRCUIT
TRANSISTOR
BETA CAL
OUT OF CIRCUIT
CIRCUIT IMPEDANCE
LOW
NORMAL
OFF
BATT. TEST
OPERATE
BETA READ
FUNCTION SELECTOR

(1)



(2)

GE-1

PRE-TEST SET-UP

a. Check the circuit boards for coding to insure that you know which Form of the test you are administering. The boards are coded on the edge with red and black strips as follows:

Form 1 - red/black/red
Form 2 - black/red/black
Form 3 - red/red/black
(See opposite page)

b. Review your copy of the technician's Test Instructions to familiarize yourself with them.

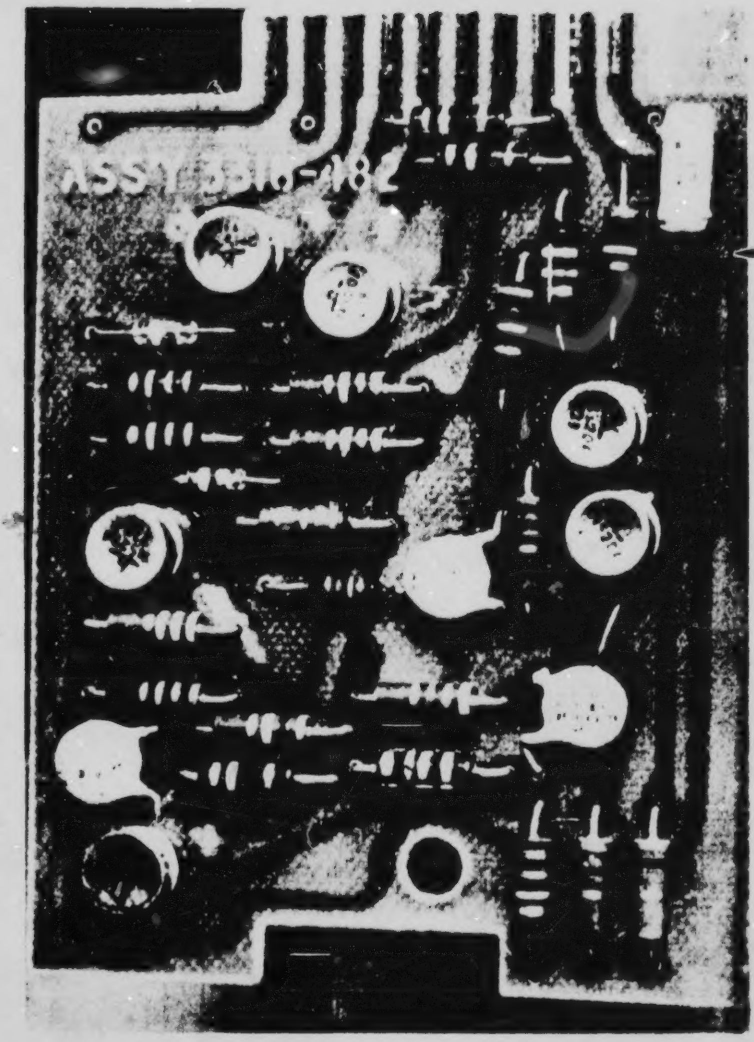
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions for Test GE-1.

b. Hand out the Circuit Board, making a note of which technicians get which boards.

c. Note the time and instruct the technician to begin the test.

d. Monitor technicians performance to insure that they use only the 1890M.



Form 1
red/black/red
strip

Form 2
black/red/black
strip

Form 3
red/red/black
strip

GE-1

PERFORMANCE EVALUATION PROCEDURES

a. When the technician has marked the bad transistors, collect the circuit board.

b. Compare the transistors the technician has marked as bad with those indicated as bad on the Answer Key for that form of the test on the opposite page.

c. Insure that the technician's identification number is on the Performance Evaluation Sheet and record the test results.

d. Technician must correctly identify both bad transistors to be scored satisfactory.

POST-TEST RECOVERY

a. Clean the marks off of the transistors on the circuit board using a small amount of solvent on a clean rag.

TEST ADMINISTRATOR ANSWER KEY

GE-1

TRANSISTOR NUMBER	CONDITION		
	FORM 1	FORM 2	FORM 3
2N541	BAD	GOOD	GOOD
2N43A	GOOD	BAD	GOOD
2N404	GOOD	GOOD	BAD

TEST ADMINISTRATOR INSTRUCTIONS

TEST

GE-2, Model TV-2 Electron Tube Test Set

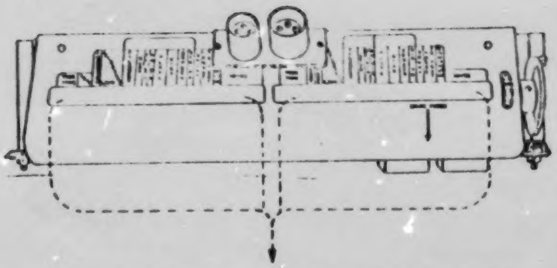
TIME ALLOTTED

30 minutes

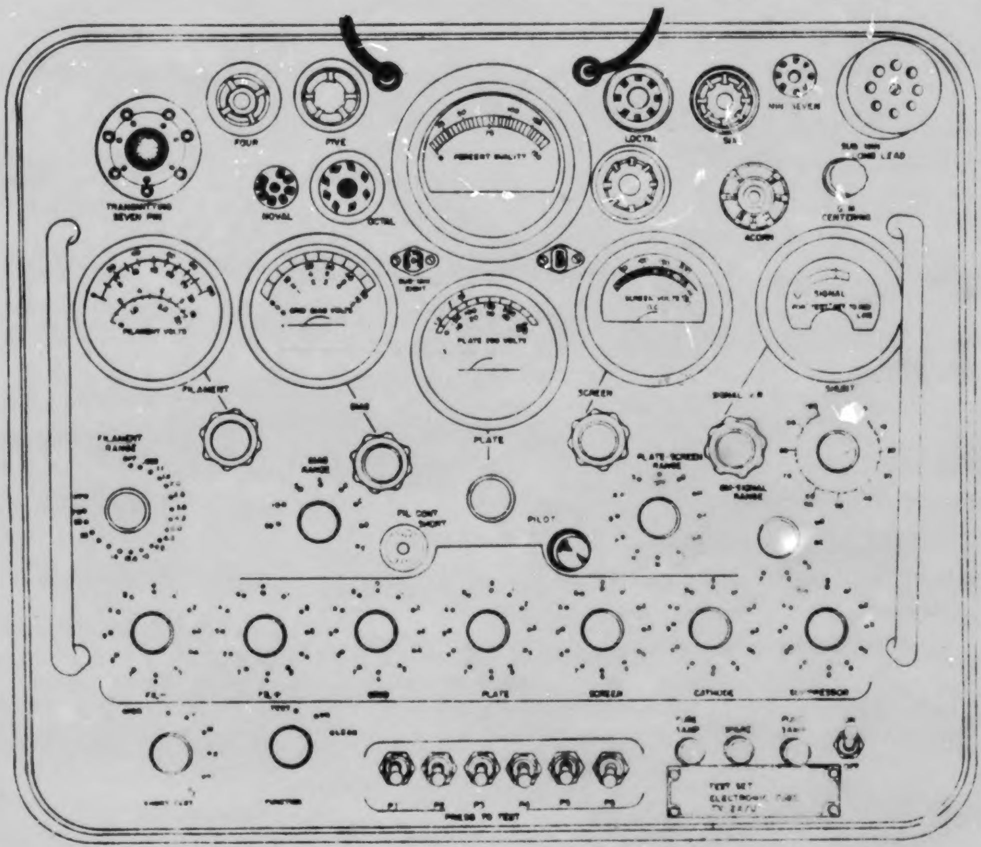
SUPPORT MATERIALS REQUIRED

a. Model TV-2 Electron Tube Test Set (1) and operating instructions

b. Electron tubes 6AK6, 6BQ7 and 6AH6, two each (one good and one bad)



TUBE TYPE	TEST	FUNCTION	SELECTORS (LTOR)	FILAMENT	BIAS	PL SCR	GM SIG	PLATE	BIAS	SCREEN	SIG VR	SHUNT	PRESS	TO TEST	MINIMUM LIMITS	NOTES
6AB4	GM	T	34 610 70	6.3	D	G	B	225	CCW		RL	76	P4		69	
6AQ5	GM	T	34 156 22	6.3	50	C	C	230	12.5	225	RL	62	P4		60	
6AQ6	GM	T	34 170 20	6.3	5	J	D	225	3		RL	68	P4		57	TRIODE SECTION
6AQ6	EM	T	34 060 20	6.3	5	S	A	20AC	0		RL	90	P2		25	DIODE # 1
6AQ6	EM	T	34 050 20	6.3	5	S	A	20AC	0		RL	90	P2		25	DIODE # 2
6AR7	GM	T	36 156 22	6.3	50	C	D	230	18	225	RL	36	P4		55	
6AU6	GM	T	34 156 72	6.3	B	N	C	210	CCW	150	RL	33	P4		60	
6AV6	EM	T	34 060 20	6.3	5	S	A	20AC	0		RL	90	P2		63	TRIODE SECTION
6AV6	EM	T	34 050 20	6.3	5	S	A	20AC	0		RL	90	P2		58	SHORT IN 2
6AV6	GM	T	36 170 20	6.3	5	J	D	225	2		RL	52	P4		65	SHORT IN 2
6BK5	GM	T	34 718 60	6.3	10	G	B	210	5	225	RL	42	P4		60	
6BK7	GM	T	54 760 80	6.3	5	N	B	90	.9		RL	73	P4		60	DIODE # 1
6BK7	GM	T	54 210 30	6.3	5	N	B	90	.9		RL	73	P4		60	DIODE # 2



TRANSMITTING SEVEN PIN
FOUR
FIVE
NOVAL
OCTAL
PERCENT QUALITY
LOCTAL
SIX
MIN SEVEN
SUB MIN
CENTERING
ACORN
FILAMENT VOLTS
GRID BIAS VOLTS
PLATE 100 VOLTS
SCREEN VOLTS
SIGNAL
FILAMENT
BIAS
PLATE
SCREEN
SIGNAL V.R
SHUNT
FILAMENT RANGE
BIAS RANGE
FIL CONT SHORT
PILOT
PLATE SCREEN RANGE
GM SIGNAL RANGE
FIL -
FIL +
GRID
PLATE
SCREEN
CATHODE
SUPPRESSOR
SHORT TEST
FUNCTION
P1
P2
P3
P4
P5
P6
PRESS TO TEST
TEST SET
ELECTRON TUBE
TV-7 ( )/U

(1) 113

GE-2

PRE-TEST SET-UP

a. The electron tube cartons will have the indication on them as to whether they contain good or bad versions of the tubes.

b. Set up the test station with either the Form 1, Form 2 or Form 3 tube sets. See the Answer Key on the opposite page for the tubes required by each form.

c. Review the technician's Test Instructions to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions for Test GE-2.

b. Note the time and instruct the technician to begin the test.

c. Observe the technician while he is taking the test to insure that he used only the TV-2.

d. When the technician has completed checking the tubes or when time has elapsed, collect his Answer Sheet and the tubes used in the test.

e. Insure that the technician's identification number is listed on the Answer Sheet.

TEST ADMINISTRATOR ANSWER KEY

GE-2

TUBE TYPE	TUBE CONDITION		
	FORM 1	FORM 2	FORM 3
6AK6	BAD	GOOD	GOOD
6BW7	GOOD	BAD	GOOD
6AH6	GOOD	GOOD	BAD

PERFORMANCE EVALUATION PROCEDURES

a. Compare the technician's answers listed in the column headed "TUBE CONDITION" with the Answer Key for that form of the test.

b. Mark any wrong answers with an "X".

c. File the technician's Answer Sheet with the others.

POST TEST RECOVERY

a. Place the tubes back into their correct cartons, being careful to put them into the correct ones (good and bad).

TEST ADMINISTRATOR INSTRUCTIONS

TEST

GE-3, Model 410B Electronic Voltmeter

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

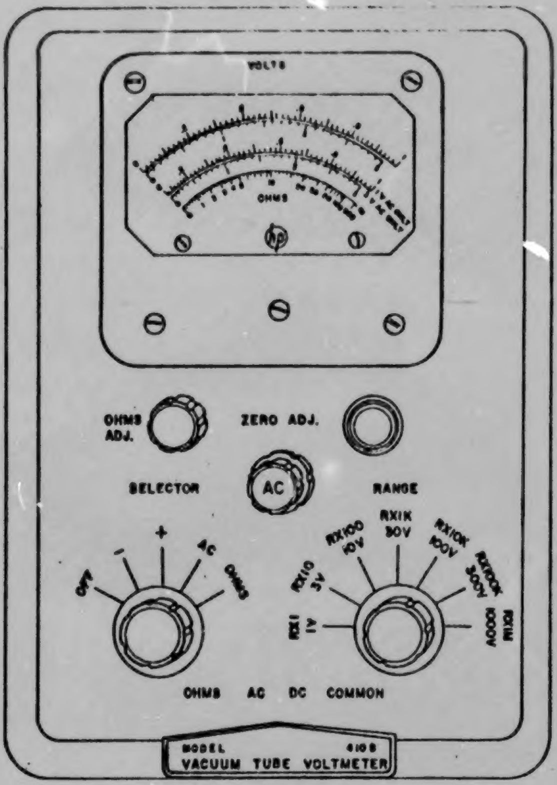
a. Model 410B Electronic Voltmeter (1) or equivalent
b. Voltage/Resistance Console (2) (special test box)

PRE-TEST SET-UP

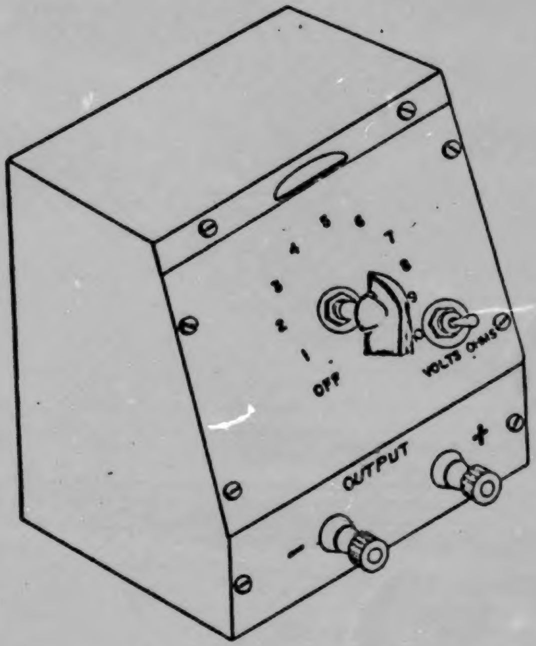
a. Insure that the above listed support materials are present at each of the testing stations.

b. Review the technician's Test Instructions to familiarize yourself with them.

c. Select one form of the test (Answer Sheet) from the Technician's Instructions to be administered. Do not give both forms of the test to the same technician.


VOLTS
OHMS
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

(1)


OFF
VOLTS OHMS
OUTPUT
-
+

(2)

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions for Test GE-3.

b. Note the time and instruct the technician to begin the test.

c. Observe the technician during the test to insure that he follows instructions.

d. Collect the technician's Answer Sheet when time has elapsed or when he has completed the test.

e. Insure that the technician's identification number is on the Answer Sheet.

PERFORMANCE EVALUATION PROCEDURES

a. Check the technician's Answer Sheet to determine which form of the test he took.

b. Compare the technician's answers with those on the appropriate Answer Key on pages 109 or 111.

c. Place an "X" beside those answers that are incorrect.

GE-3 FORM 1

TEST ADMINISTRATOR ANSWER KEY

Section I

Switch Position	Assigned Value	In Tolerance? YES	In Tolerance? NO
1	4.5 vdc		X
2	17.5 vac	X	
3	43 vac		X
4	40 vdc		X
5	24 vdc		X
6	0 vdc	X	
7	3 vdc		X
8	6 vac		X
9	8 vac		X
10	30 vdc		X

Section II

Switch Position	Assigned Value	YES	NO
1	100 ohms		X
2	38 ohms	X	
3	100 ohms		X
4	11 k	X	
5	6 k		X
6	16 k		X
7	260 k	X	
8	400 k		X
9	7.5 Meg		X
10	4.5 Meg		X

GE-3 FORM 2

TEST ADMINISTRATOR ANSWER KEY

Section I - Voltage		In Tolerance?	
Switch Position	Assigned Value	YES	NO
1	6 vac		X
2	1.5 vdc		X
3	64 vac	X	
4	12 vac		X
5	10 vac		X
6	0 vdc	X	
7	3 vdc		X
8	10 vac		X
9	20 vac		X
10	30 vdc		X

Section II - Resistance

Switch Position	Assigned Value	YES	NO
1	100 ohms		X
2	100 ohms		X
3	1 k	X	
4	9 k		X
5	30 k		X
6	5.6 k		X
7	260 k	X	
8	180 k		X
9	1.7 Meg	X	
10	00	X	

TEST ADMINISTRATOR INSTRUCTIONS

TEST

GE-4, Tektronic 545B Oscilloscope

TIME ALLOTTED

60 minutes

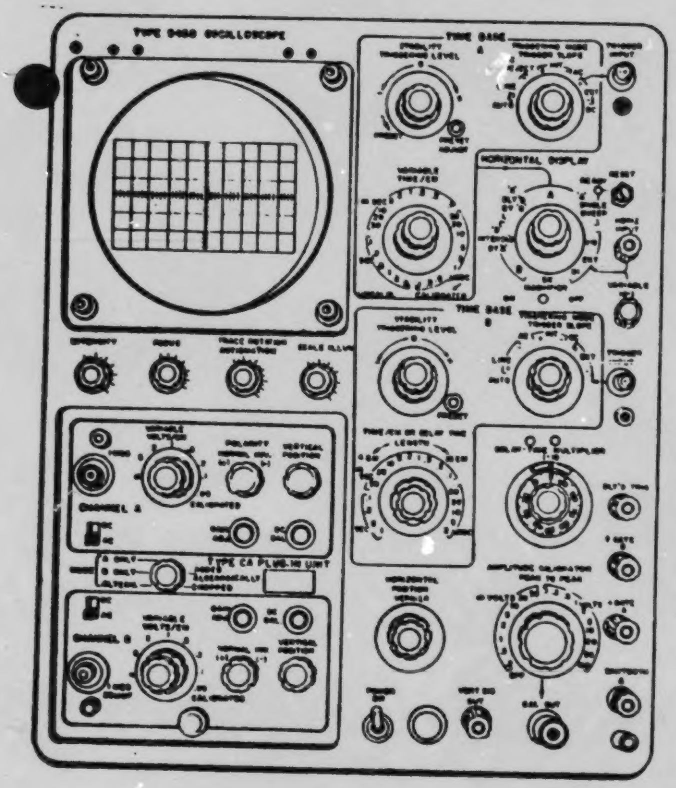
SUPPORT MATERIALS REQUIRED

a. Tektronic 545B Oscilloscope with CA plug-in (1)
b. Two 10:1 Probes (2)
c. Instruction manuals for oscilloscope and plug-in
d. Waveform Generator Console (3) (special test box)

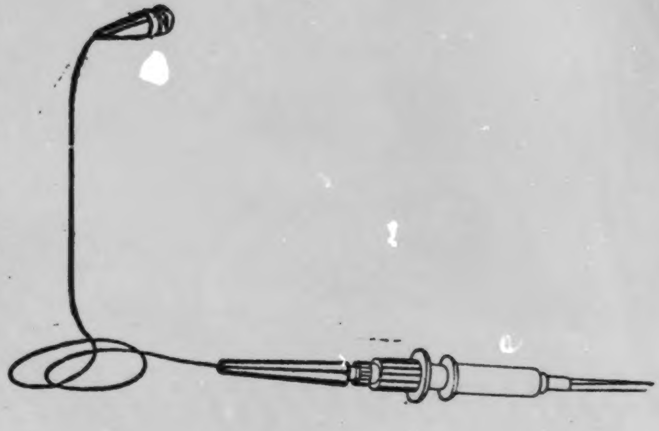
PRE-TEST SET-UP

a. Insure that the above listed materials are available at each of the testing stations to be used.

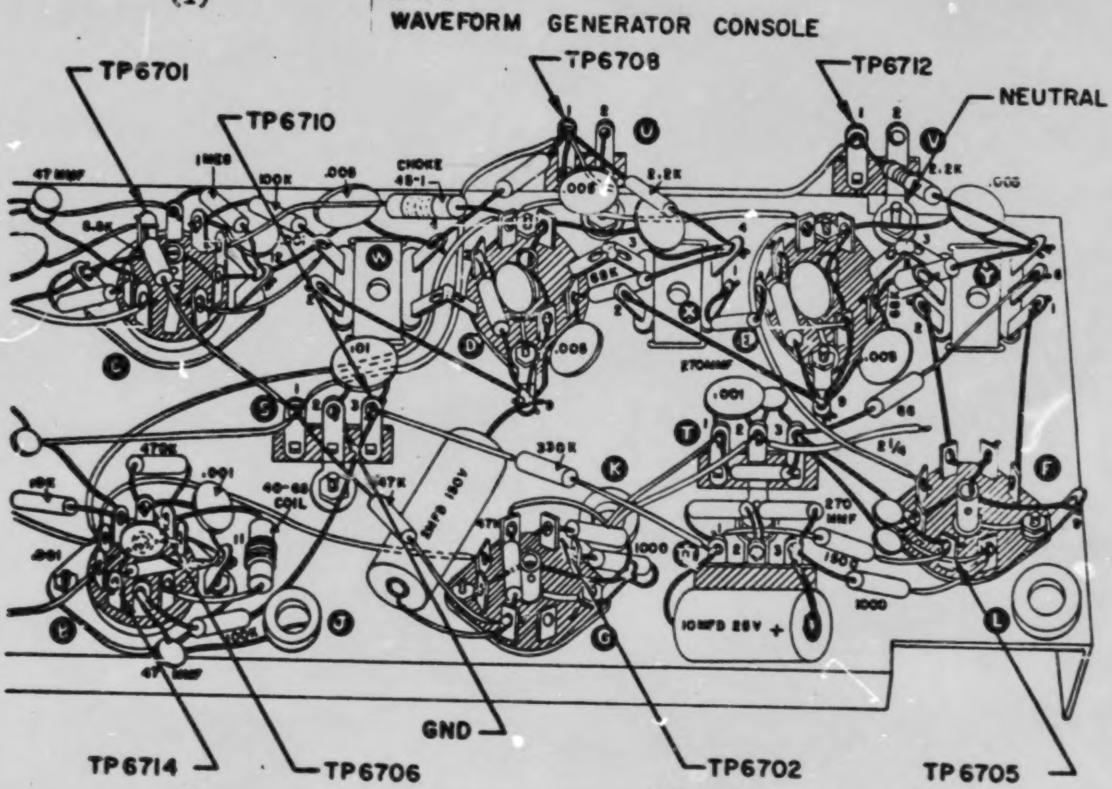
b. There are three versions of this test - Forms 1, 2, & 3. Each contains eight problems.


TIME BASE A
STABILITY
TRIGGERING LEVEL
HORIZONTAL DISPLAY
VARIABLE TIME/CM
TIME BASE B
INTENSITY
FOCUS
TRACE ROTATION ASTIGMATISM
SCALE ILLUM
CHANNEL A
VARIABLE VOLTS/CM
POLARITY
VERTICAL POSITION
DELAY-TIME MULTIPLIER
TYPE CA PLUG-IN UNIT
CHOPPED
CHANNEL B
HORIZONTAL POSITION
VERNIER
AMPLITUDE CALIBRATOR PEAK TO PEAK
CALIBRATED

(1)



(2)


WAVEFORM GENERATOR CONSOLE
TP6701
TP6710
TP6708
TP6712
NEUTRAL
47 MMF
1MEG
100K
.008
CHOKE 48-1
2.2K
.008
6.8K
.005
.001
270MMF
.01
470K
40-68 COIL
330K
10MFD 25V
1000
TP6714
TP6706
GND
TP6702
TP6705
C
D
E
F
G
H
J
K
L
S
T
U
V
W
X
Y

(3)

c. If several technicians are being tested at once, give different forms of the test to adjacent technicians.

d. If technicians are being tested one after the other, give different forms each administration.

e. Decalibrate the test probe by loosening the collar (see opposite page) and turning the sleeve ½ turn counter-clockwise. Retighten the collar.

TEST ADMINISTRATION PROCEDURES

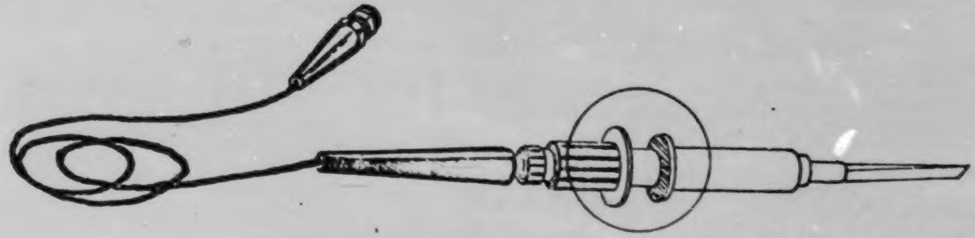
a. Have the technician read his instructions for test GE-4.

b. Note the time and instruct the technician to begin the test.

PERFORMANCE EVALUATION PROCEDURES

a. Problem 1.

1. This problem consists of calibrating the test probe. It is the same on all forms of the test.



2. When the technician has calibrated the probe, collect his Instruction Sheet for Problem 1.

3. Compare the indication that the technician has obtained on the oscilloscope with that shown on the Answer Key (see opposite page).

4. If the probe has been properly calibrated:

   - Check "YES" on the Performance Evaluation portion of the Instruction Sheet

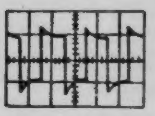
   - Instruct the technician to continue the test.

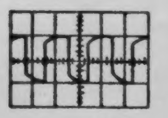
5. If the probe has not been properly calibrated:

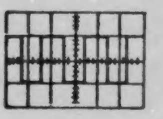
   - Check "NO" on the Performance Evaluation portion of the Instruction Sheet

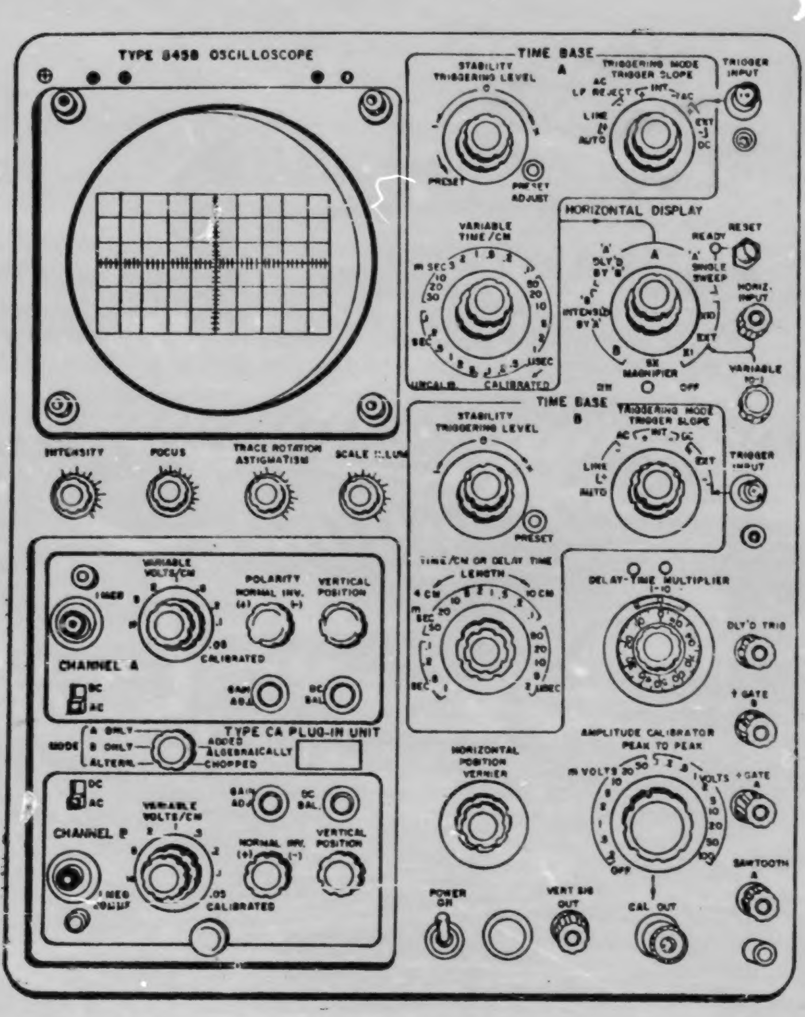
   - Assist the technician to properly claibrate the probe

   - Instruct the technician to continue the test.

☐ 

☐ 

☒ 


TYPE 545B OSCILLOSCOPE
TIME BASE A
STABILITY
TRIGGERING LEVEL
PRESET
PRESET ADJUST
TRIGGERING MODE
TRIGGER SLOPE
AC
LF REJECT
INT
DC
LINE
AUTO
EXT
TRIGGER INPUT
HORIZONTAL DISPLAY
VARIABLE TIME/CM
m SEC
SEC
μSEC
UNCALIB.
CALIBRATED
'A' DLY'D BY 'B'
'B' INTENSIFIED BY 'A'
A
B
READY
RESET
'A' SINGLE SWEEP
HORIZ. INPUT
EXT
X10
X1
5X MAGNIFIER
ON
OFF
VARIABLE 10-1
TIME BASE B
INTENSITY
FOCUS
TRACE ROTATION ASTIGMATISM
SCALE ILLUM
TIME/CM OR DELAY TIME LENGTH
DELAY-TIME MULTIPLIER
DLY'D TRIG
+ GATE B
AMPLITUDE CALIBRATOR PEAK TO PEAK
m VOLTS
VOLTS
OFF
+ GATE A
SAWTOOTH A
HORIZONTAL POSITION VERNIER
POWER ON
VERT SIG OUT
CAL OUT
VARIABLE VOLTS/CM
POLARITY
NORMAL
INV.
(+)
(-)
VERTICAL POSITION
CALIBRATED
CHANNEL A
DC
AC
GAIN ADJ.
DC BAL.
MODE
A ONLY
B ONLY
ALTERN.
ADDED ALGEBRAICALLY
CHOPPED
TYPE CA PLUG-IN UNIT
CHANNEL B

b. Problems 2 through 8

1. When the technician has completed the problems, collect his Instructions and Answer Sheets and insure that his identification number is on them.

2. Compare his answers to the Answer Key for that form (see pages 119 to 165).

3. Each problem has two parts:

    (a) Is the signal within tolerance?

    (b) What control settings were used?

4. Part (a) is to be answered at the bottom of the Instruction Sheet. If it is answered incorrectly, mark it with an "X".

5. Part (b) is answered on a second sheet. Check the settings used to see that they are the same as those on the Answer Key.

6. Where the Answer Key indicates "N/A", disregard the technicians settings. These are irrelevant settings.

7. Mark any other answers that are wrong with an "X".

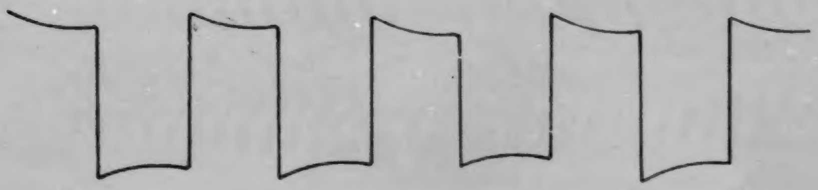
TEST ADMINISTRATOR ANSWER KEY

GE-4, PROBLEM 1, FORM 1

PROCEDURES:

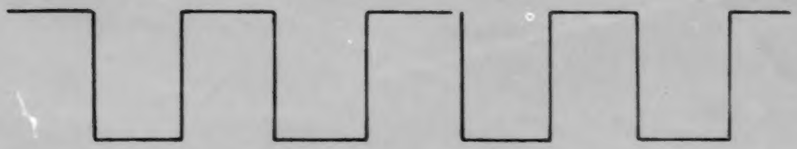
a. Calibrate the 2 oscilloscope test probes at your test position.

b. Notify your Test Administrator as soon as you complete the test probe calibration.



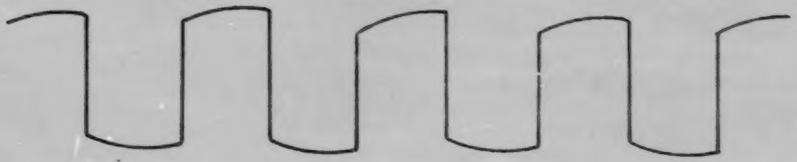
Under

Compensated



Correctly

Compensated



Over

Compensated

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 2, FORM 1

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

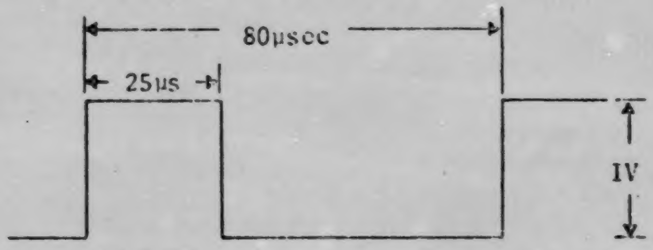
c. Determine the values of the waveform present at Test Point 6702 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=12.5 KC

Within Tolerance ___

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 2, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLT/CM (Channel A)	N/A
AMPLITUDE CALIBRATOR	N/A
TIME/CM (TIME BASE A)	N/A
VARIABLE, TIME/CM (TIME BASE A)	CALIBRATED
VARIABLE, VOLTS/CM (Channel A)	CALIBRATED

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 3, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground your oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set the sweep to display approximately two cycles of the waveforms present at Test Points 6708 and 6712 on the Waveform Generator Console.

d. Set Channel "A" and Channel "B" Volts/CM controls at 1 and the Volts/CM Variable control at the Calibrated position.

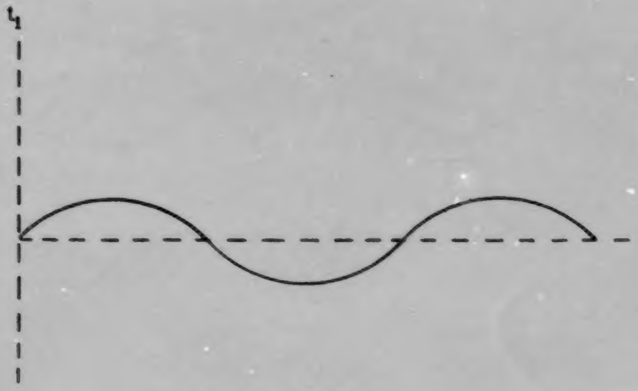
e. Use the available features of the oscilloscope to eliminate unwanted portions of a composite signal.

f. Compare the resultant waveform on the oscilloscope with the one shown below to determine if it is within tolerance of 0%.

g. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

h. When you have marked your answer, record your selected scope settings on the Oscilloscope Control Setting Answer Sheet.

i. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance __

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 3, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLTS/CM (Channel A)	1
VOLTS/CM (Channel B)	1
PREAMP MODE	Added Algebraically

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 4, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

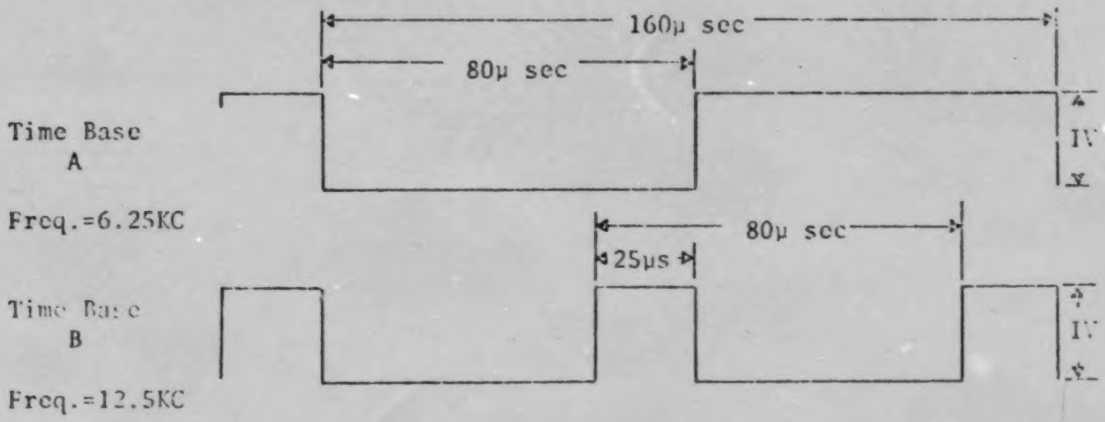
c. Determine the values of the waveforms present at Test Points 6702 6706 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveforms on the oscilloscope with the ones shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveforms are in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 4, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLTS/CM (Channel A)	N/A
VOLTS/CM (Channel B)	N/A
MODE/Dual Trace Preamp	Alternate
VARIABLE, TIME/CM (Time Base A)	Calibrated
VARIABLE, VOLTS/CM (Channel A)	Calibrated

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 5, FORM 1

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep to display seven pulses of the waveform present at Test Point 6710 on the Waveform Generator Console.

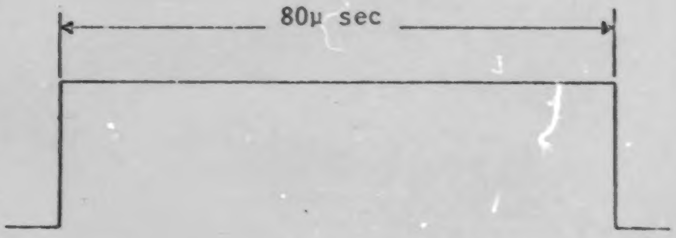
d. Utilize the delayed pulse feature to display the center pulse (4th positive going pulse from the left) in the center of the graticule.

e. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance X

Out of Tolerance ___

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 5, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Trigger Mode (Time Base A)	Any setting except Auto
Horizontal Display	"A" Dly'd by "B"
DELAY Multiplier (Read-out)	Approximately 4:60
Stability (Time Base A)	Fully Clockwise
Time/CM (Time Base A)	10 usec
Time/CM (Time Base B)	.1 msec

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 6, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep for 20 usec per CM to display approximately one cycle of the waveform present at Test Point 6706 on the Waveform Generator Console.

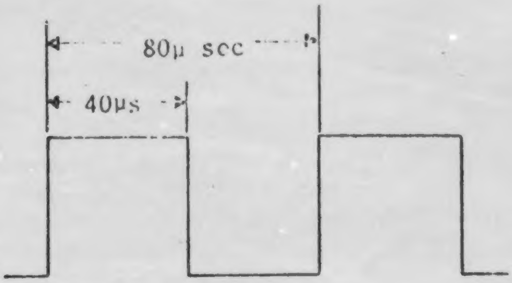
d. Use the delayed trigger to determine the width of one cycle.

e. Compare the resultant values of the waveform on the scope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

Within Tolerance ____

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 6, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Horizontal Display	B
Time/CM (Time Base B)	20 usec
Delay-Time Multiplier	8
Preamp Mode	Alternate

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 7, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set both Channel "A" and "B" Volts/CM to 1 and Variable to Calibrate position.

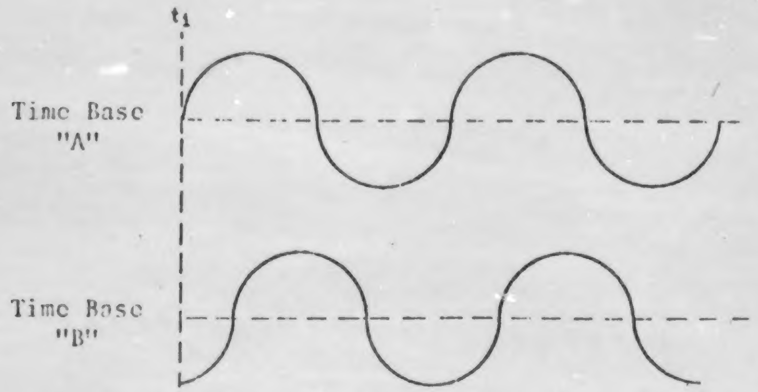
d. Display the Waveform Generator Console waveforms present at Test Points 6701 and 6712 on the oscilloscope.

e. Compare the phase relationship of the waveforms on the oscilloscope with the phase relationship of the waveforms shown below.

f. How does the set of waveforms displayed on the oscilloscope compare in phase relationship with the set shown below?

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Note: Time Base "B" lags Time Base "A" by 60 degrees

How do the two sets of waveforms compare?
The phase relationship is the same in both sets. ____
The phase relationship is different between the two sets. X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 7, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Horizontal Display	N/A
Time/CM	N/A
Delay Time Multiplier	N/A
Preamp Mode	Chopped

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 8, FORM 1

PROCEDURES:

a. Channel "A" will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

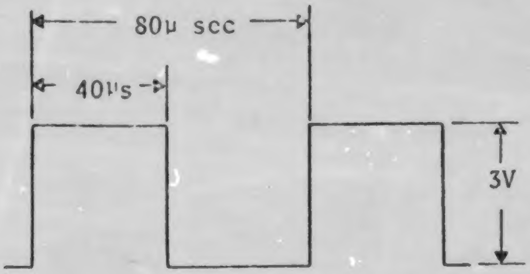
c. Determine the values of the waveform present at Test Point 6710 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25

Within Tolerance ___

Out of Tolerance _X_

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 8, FORM 1

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Volts/CM (Channel A)	N/A
Amplitude Calibrator	N/A
Variable, Time/CM (Time Base A)	Calibrated

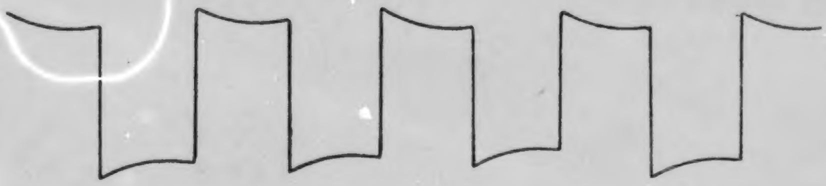
TEST ADMINISTRATOR ANSWER KEY

GE-4, PROBLEM 1, FORM 2

PROCEDURES:

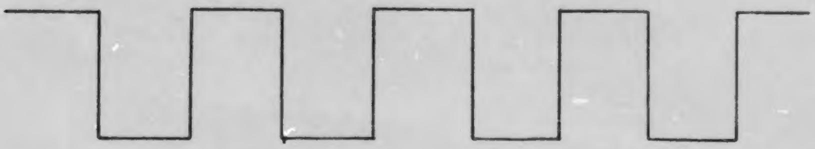
a. Calibrate the 2 oscilloscope test probes at your test position.

b. Notify your Test Administrator as soon as you complete the test probe calibration.



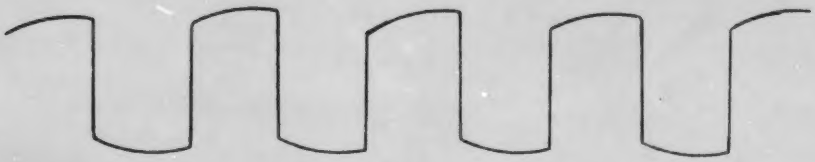
Under

Compensated



Correctly

Compensated



Over

Compensated

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 2, FORM 2

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

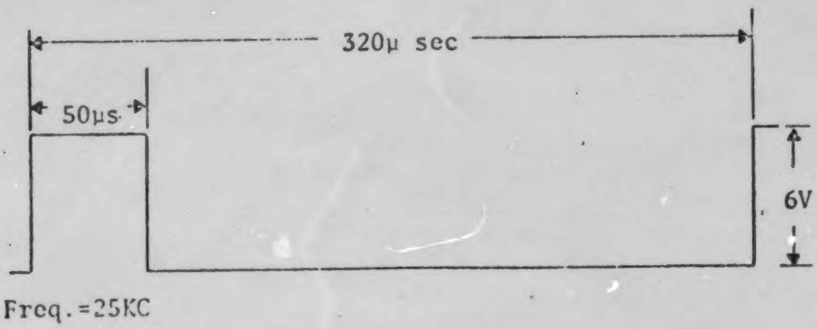
c. Determine the values of the waveform present at Test Point 6702 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within Tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance ___

Out of Tolerance _X_

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 2, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLT/CM (Channel A)	N/A
AMPLITUDE CALIBRATOR	N/A
TIME/CM (TIME BASE A)	N/A
VARIABLE, TIME/CM (TIME BASE A)	CALIBRATED
VARIABLE, VOLTS/CM (Channel A)	CALIBRATED

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 3, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground your oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set the sweep to display approximately two cycles of the waveforms present at Test Points 6708 and 6712 on the Waveform Generator Console.

d. Set Channel "A" and Channel "B" Volts/CM controls at 1 and the Volts/CM Variable control at the Calibrated position.

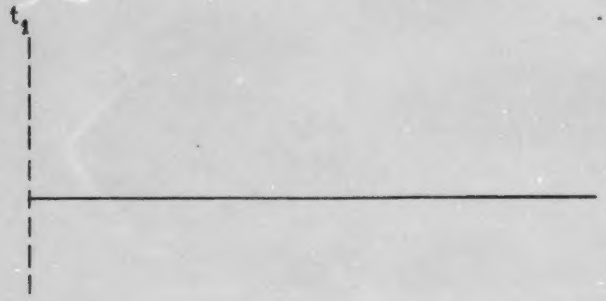
e. Use the available features of the oscilloscope to eliminate unwanted portions of a composite signal.

f. Compare the resultant waveform on the oscilloscope with the one shown below to determine if it is within tolerance of 0%.

g. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

h. When you have marked your answer, record your selected scope settings on the Oscilloscope Control Setting Answer Sheet.

i. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance X

Out of Tolerance ____

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 3, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Volts/CM (Channel A)	1
Volts/CM (Channel B)	1
Preamp Mode	Added Algebraically

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 4, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

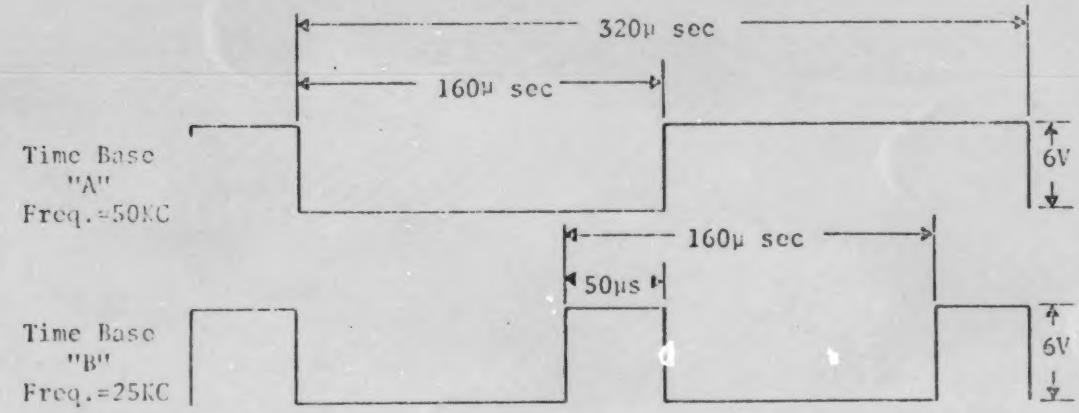
c. Determine the values of the waveforms present at Test Points 6702 and 6706 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveforms on the oscilloscope with the ones shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveforms are in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance ___

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 4, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLTS/CM (Channel A)	N/A
VOLTS/CM (Channel B)	N/A
MODE/Dual Trace Preamp	Alternate
VARIABLE, TIME/CM (Time Base A)	Calibrated
Variable, VOLTS/CM (Channel A)	Calibrated

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 5, FORM 2

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep to display seven pulses of the waveform present at Test Point 6710 on the Waveform Generator Console.

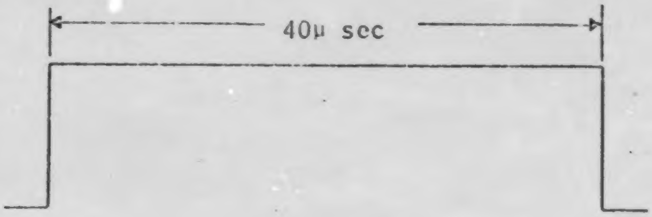
d. Utilize the delayed pulse feature to display the center pulse (4th positive going pulse from the left) in the center of the graticule.

e. Compare all of the resultant values of the waveform on the oscilliscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance ___

Out of Tolerance _X_

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 5, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
TRIGGER MODE (TIME BASE A)	Any setting except Auto
HORIZONTAL DISPLAY	"A" Dly'd by "B"
DELAY MULTIPLIER (READ-OUT)	Approximately 4:60
STABILITY (TIME BASE A)	Fully Clockwise
TIME/CM (TIME BASE A)	10 usec
TIME/CM (TIME BASE B)	.1 msec

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 6, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep for 20 usec per CM to display approximately one cycle of the waveform present at Test Point 6706 on the Waveform Generator Console.

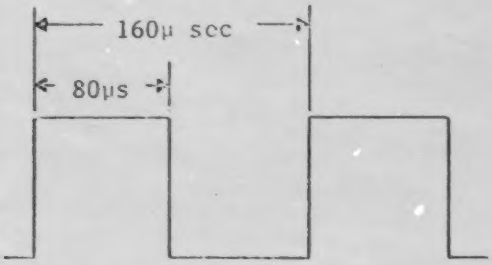
d. Use the delayed trigger to determine the width of one cycle.

e. Compare the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

Within Tolerance X

Out of Tolerance ___

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 6, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
HORIZONTAL DISPLAY	B
TIME/CM (TIME BASE B)	20 usec
DELAY-TIME MULTIPLIER	8
PREAMP MODE	Alternate

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 7, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set both Channel "A" and "B" Volts/CM to 1 and Variable to Calibrate position.

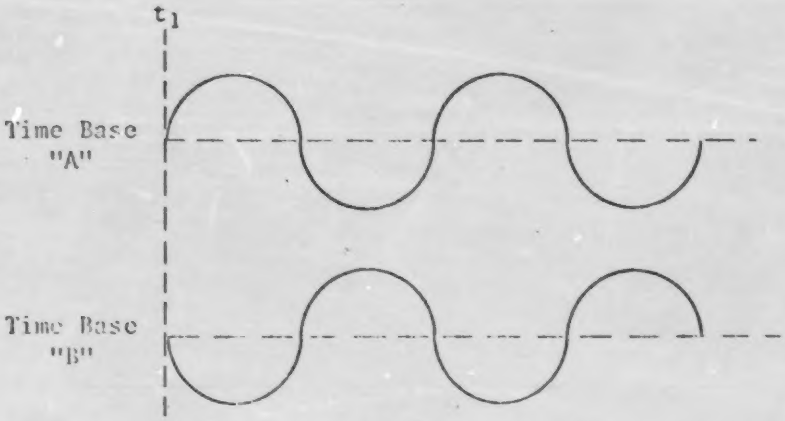
d. Display the Waveform Generator Console waveforms present at Test Points 6701 and 6712 on the oscilloscope.

e. Compare the phase relationship of the waveforms on the oscilloscope with the phase relationship of the waveforms shown below.

f. How does the set of waveforms displayed on the oscilloscope compare in phase relationship with the set shown below?

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Note: Time Base "B" lags Time Base "A" by 180 degrees

How do the two sets of waveforms compare?

The phase relationship is the same in both sets X

The phase relationship is different between the two sets.___

TEST ADMINISTRATION ANSWER KEY 2

GE-4, PROBLEM 7, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
HORIZONTAL DISPLAY	N/A
TIME/CM	N/A
DELAY TIME MULTIPLIER	N/A
PREAMP MODE	Chopped

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 8, FORM 2

PROCEDURES:

a. Channel "A" will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

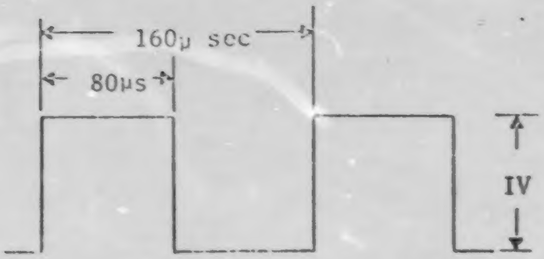
c. Determine the values of the waveform present at Test Point 6710 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

Within Tolerance X

Out of Tolerance ___

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 8, FORM 2

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Volts/CM (Channel A)	N/A
Amplitude Calibrator	N/A
Variable, Time/CM (Time Base A)	Calibrated

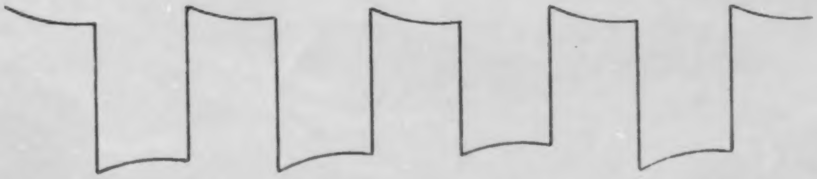
TEST ADMINISTRATOR ANSWER KEY

GE-4, PROBLEM 1, FORM 3

PROCEDURES:

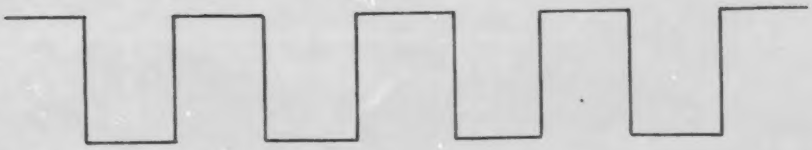
a. Calibrate the 2 oscilloscope test probes at your position.

b. Notify your Test Administrator as soon as you complete the test probe calibration.



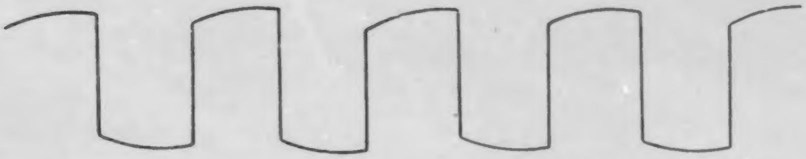
Under

Compensated



Correctly

Compensated



Over

Compensated

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 2, FORM 3

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

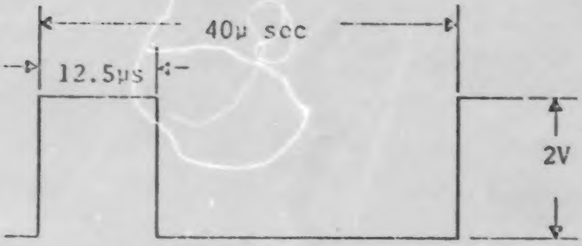
c. Determine the values of the waveform present at Test Point 6702 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within the tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go the next problem.



Freq.=6.25KC

Within Tolerance __

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 2, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLT/CM (Channel A)	N/A
AMPLITUDE CALIBRATER	N/A
TIME/CM (TIME BASE A)	N/A
VARIABLE, TIME/CM (TIME BASE A)	CALIBRATED
VARIABLE, VOLTS/CM (Channel A)	CALIBRATED

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 3, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscillescope will be used for this problem.

b. Ground your oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set the sweep to display approximately two cycles of the waveforms present at Test Point 6708 and 6712 on the Waveform Generator Console.

d. Set Channel "A" and Channel "B", Volts/CM controls at 1 and the Volts/CM Variable control at the Calibrated position.

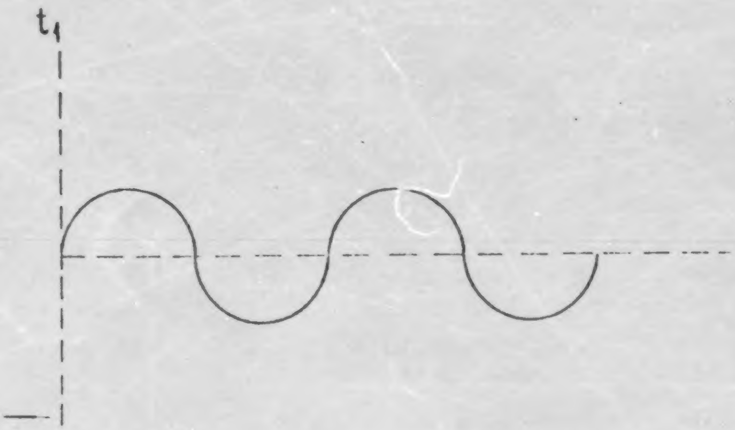
e. Use the available features of the oscilloscope to eliminate unwanted portions of a composite signal.

f. Compare the resultant waveform on the oscilloscope with the one shown below to determine if it is within tolerance of 0%.

g. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

h. When you have marked your answer, record your selected scope settings on the Oscilloscope Control Setting Answer Sheet.

i. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance ___

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 3, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Volts/CM (Channel A)	1
Volts/CM (Channel B)	1
Preamp Mode	Added Algebraically

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 4, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

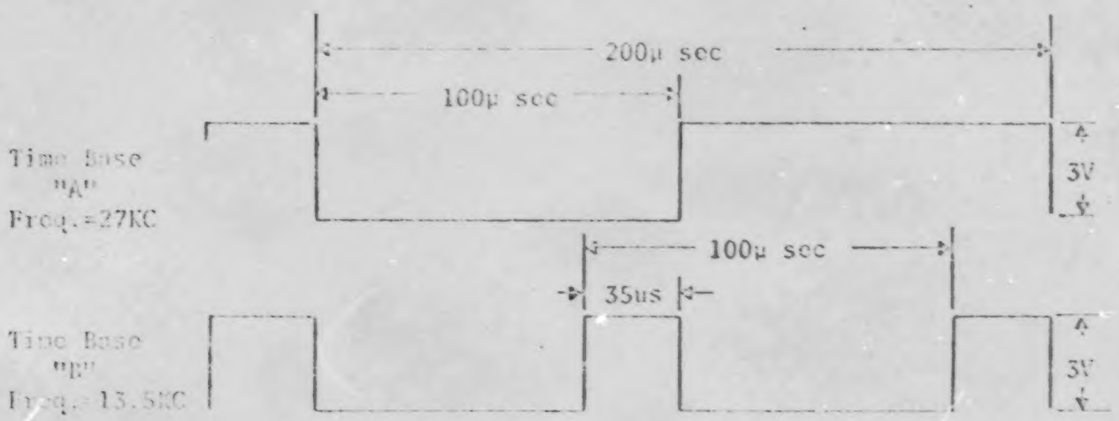
c. Determine the values of the waveforms present at Test Point 6702 and 6706 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveforms on the oscilloscope with the ones shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveforms are in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance ____

Out of Tolerance __X__

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 4, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
VOLTS/CM (Channel A)	N/A
VOLTS/CM (Channel B)	N/A
MODE/Dual Trace Preamp	Alternate
VARIABLE, TIME/CM (Time Base A)	Calibrated
VARIABLE, VOLTS/CM (Channel A)	Calibrated

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 5, FORM 3

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep to display seven pulses of the waveform present at Test Point 6710 on the Waveform Generator Console.

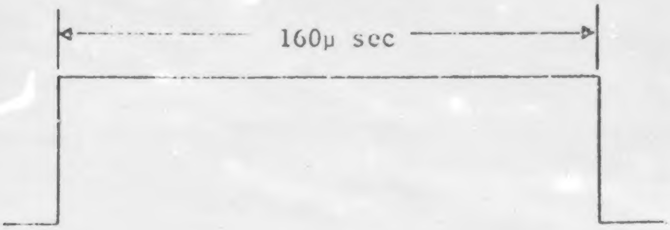
d. Utilize the delayed pulse feature to display the center pulse (4th positive going pulse from the left) in the center of the graticule.

e. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance ____

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 5, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Trigger Mode (Time Base A)	Any setting except Auto
Horizontal Display	"A" Dly'd by "B"
DELAY Multiplier (Read-out)	Approximately 4:60
Stability (Time Base A)	Fully Clockwise
Time/CM (Time Base A)	10 usec
Time/CM (Time Base B)	.1 msec

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 6, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep for 20 usec per CM to display approximately one cycle of the waveform present at Test Point 6706 on the Waveform Generator Console.

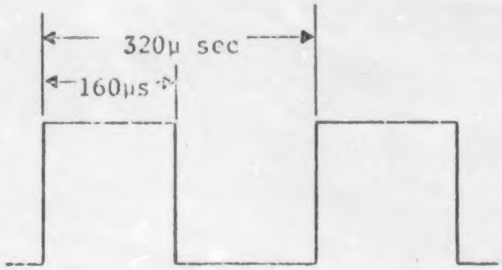
d. Use the delayed trigger to determine the width of one cycle.

e. Compare the resultant values of the waveform on the scope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=25KC

Within Tolerance ___

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 6, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Horizontal Display	B
Time/CM (Time Base B)	20 usec
Delay-Time Multiplier	8
Preamp Mode	Alternate

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 7, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set both Channel "A" and "B" Volts/CM to 1 and variable to calibrate position.

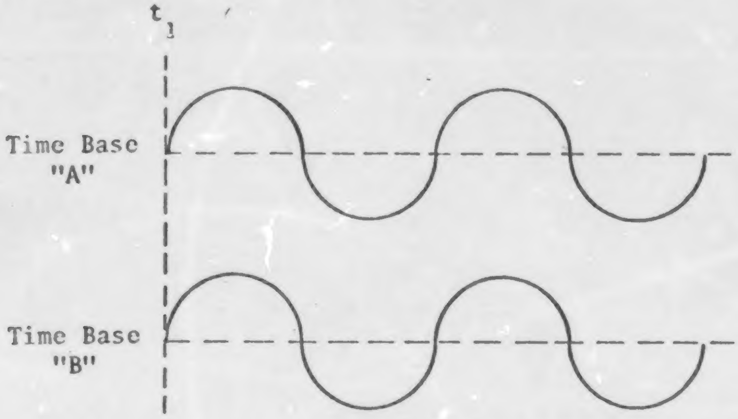
d. Display the Waveform Generator Console waveforms present at Test Point 6701 and 6712 on the oscilloscope.

e. Compare the phase relationship of the waveforms on the oscilloscope with the phase relationship of the waveforms shown below.

f. How does the set of waveforms displayed on the oscilloscope compare in phase relationship with the set shown below?

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Note: Time Base "A" and Time Base "B" are in phase

How do the two sets of waveform compare?

The phase relationship is the same in both sets? ___

The phase relationship is different between the two sets? X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 7, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Horizontal Display	N/A
Time/CM	N/A
Delay Time Multiplier	N/A
Preamp Mode	Chopped

TEST ADMINISTRATOR ANSWER KEY 1

GE-4, PROBLEM 8, FORM 3

PROCEDURES:

a. Channel "A" will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console

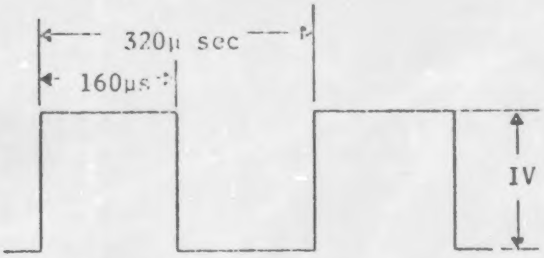
c. Determine the values of the waveform present at Test Point 6710 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform with the one shown below to determine if it is within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=50KC

Within Tolerance ___

Out of Tolerance X

TEST ADMINISTRATOR ANSWER KEY 2

GE-4, PROBLEM 8, FORM 3

OSCILLOSCOPE CONTROL SETTING

CONTROL	SETTING
Volts/CM (Channel A)	N/A
Amplitude Calibrator	N/A
Variable, Time/CM (Time Base A)	Calibrated

TEST ADMINISTRATOR INSTRUCTIONS

TEST

CO-1, Radar Set AN/APN-147 Operational Check

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test set-up as described in Section A, Part IV
b. Blade-type screw driver
c. Stop watch
d. T.O. 12P5-2APN147-2 or other applicable technical reference

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. After you have found the Radar set to be operating properly, disconnect all the equipment involved in the bench set-up.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Performance Evaluation Sheet.

b. Note the time and have the technician begin the test.

c. When the technician has completed his bench set-up check it for correctness. Use the diagram on the opposite page for reference. If more detailed information is needed, see Section A, Part IV.

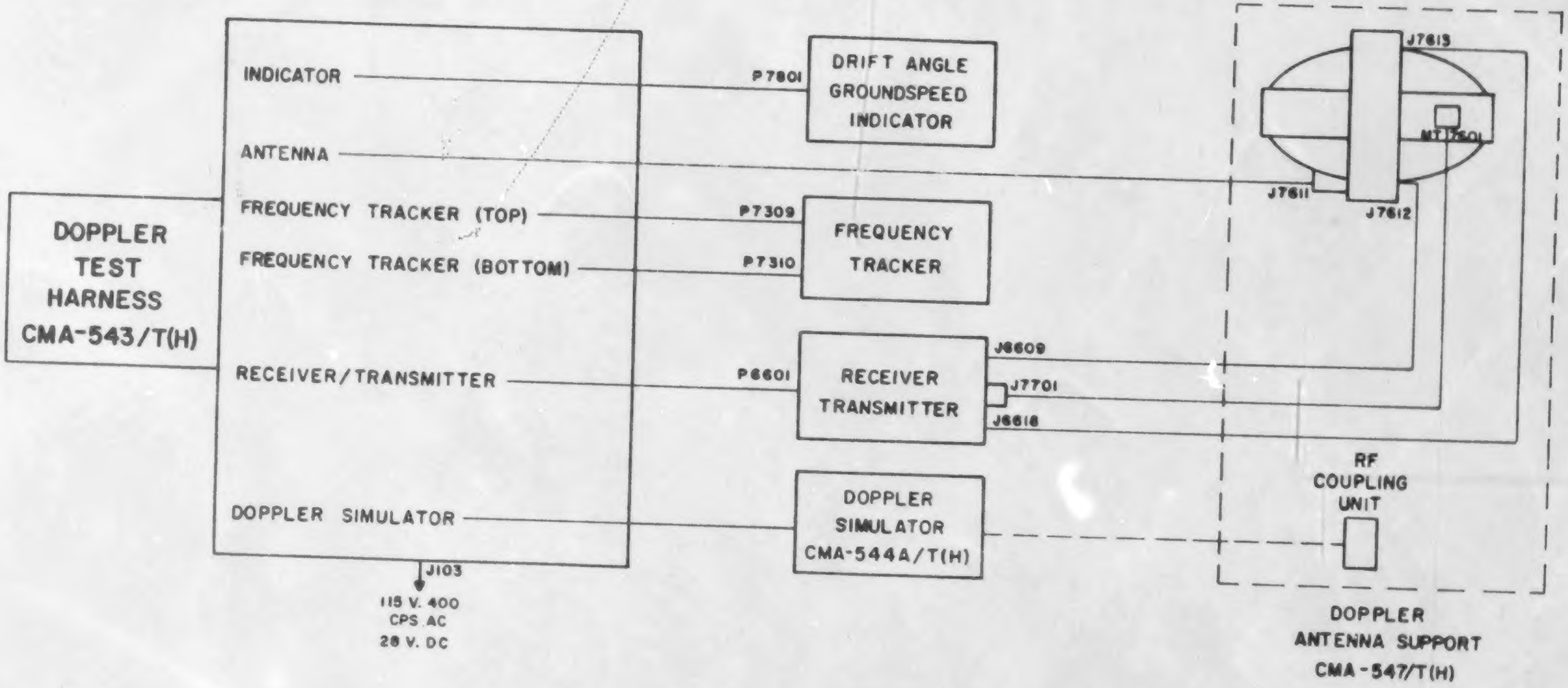
d. If technician has properly completed his bench set-up have him demonstrate that he can perform the Operational Check. Use Section A, Part V, for reference.

PERFORMANCE EVALUATION PROCEDURES

a. As the technician demonstrates his bench set-up and performs the Operational Check, answer Questions A and B on his Performance Evaluation Sheet.

POST-TEST RECOVERY

a. Have the technician disconnect the equipment that he set up and replace it in its original location.


DOPPLER
TEST
HARNESS
CMA-543/T(H)
INDICATOR
ANTENNA
FREQUENCY TRACKER (TOP)
FREQUENCY TRACKER (BOTTOM)
RECEIVER/TRANSMITTER
DOPPLER SIMULATOR
J103
115 V. 400
CPS AC
28 V. DC
P7801
DRIFT ANGLE
GROUNDSPEED
INDICATOR
P7309
P7310
FREQUENCY
TRACKER
P6601
RECEIVER
TRANSMITTER
J6609
J7701
J6618
DOPPLER
SIMULATOR
CMA-544A/T(H)
J7613
MT7501
J7611
J7612
RF
COUPLING
UNIT
DOPPLER
ANTENNA SUPPORT
CMA-547/T(H)

TEST ADMINISTRATOR INSTRUCTIONS

TEST

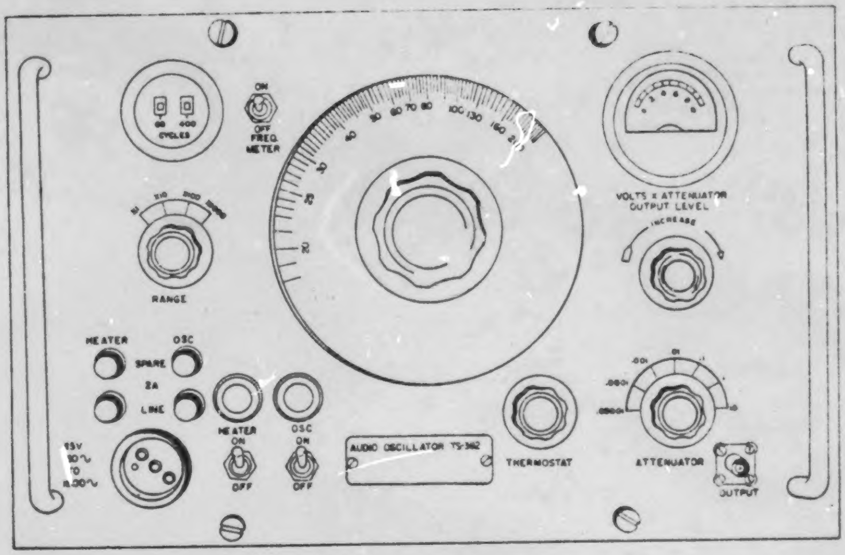
CO-2, Navigational Computer AN/ASN-35 Operational Check

TIME ALLOTTED

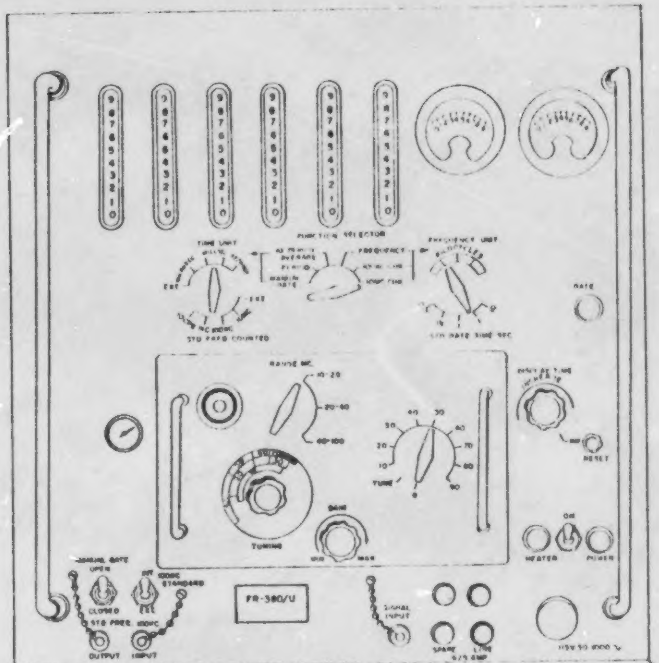
30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part VII
b. Audio Oscillator (1)
c. Frequency Meter (2) AN/USM-26 or equivalent
d. Coaxial cables and adaptors
e. T. O. 5N1-3-8-2 or other applicable technical reference


CYCLES
60
400
ON
OFF
FREQ. METER
RANGE
HEATER
OSC
SPARE
2A
LINE
115V
50~
TO
1,600~
HEATER
ON
OFF
OSC
ON
OFF
AUDIO OSCILLATOR TS-382
THERMOSTAT
VOLTS x ATTENUATOR OUTPUT LEVEL
INCREASE
ATTENUATOR
OUTPUT

(1)


FUNCTION SELECTOR
TIME UNIT
FREQUENCY UNIT
STD FREQ COUNTED
RATE
RANGE MC.
10-20
20-40
40-100
TUNE
TUNING
GAIN
RESET
HEATER
ON
POWER
MANUAL GATE
OPEN
CLOSED
STD FREQ.
100KC STANDARD
OUTPUT
INPUT
FR-38O/U
SIGNAL INPUT
SPARE
LINE
6/5 AMP
115V 50 1000 ~

(2)

CO-2

PRE-TEST SET-UP

a. Perform an operational check of the Navigational Computer to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. After you have found the Computer to be operating properly, disconnect all the equipment involved in the bench set-up.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Performance Evaluation Sheet.

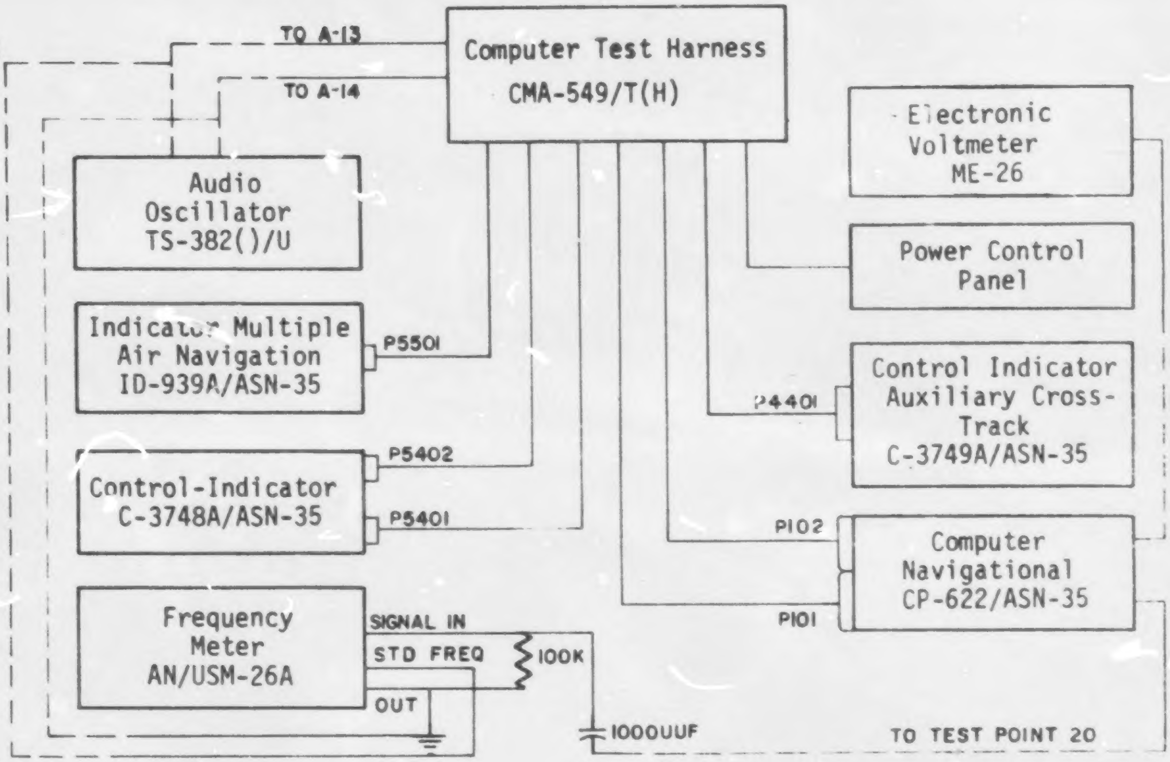
b. Note the time and have the technician begin the test.

c. When the technician has completed his bench set-up, check it for correctness. Use the diagram on the opposite page for reference. If more detailed information is needed, see Section A, Part VIII, for reference.

d. If the technician can properly complete the bench set-up, have him demonstrate the Operational Check. Use Section A, Part VIII for reference.

PERFORMANCE EVALUATION PROCEDURES

a. As the technician demonstrates his bench set-up and performs the Operational Check, answer Questions A and B on his Performance Evaluation Sheet.


Computer Test Harness
CMA-549/T(H)
TO A-13
TO A-14
Audio Oscillator TS-382()/U
Indicator Multiple Air Navigation ID-939A/ASN-35
P5501
Control-Indicator C-3748A/ASN-35
P5402
P5401
Frequency Meter AN/USM-26A
SIGNAL IN
STD FREQ
OUT
100K
1000UUF
TO TEST POINT 20
Electronic Voltmeter ME-26
Power Control Panel
Control Indicator Auxiliary Cross-Track C-3749A/ASN-35
P4401
Computer Navigational CP-622/ASN-35
P102
P101

CO-2

POST-TEST RECOVERY

a. Have the technician disconnect the equipment that he set-up and replace it in its original location.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

SE-1, Signal Generator, AN/URM-25D Usage

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. T.O. 12P5-2APN147-2 or Applicable Technical Data

c. Coaxial cables and adaptors

d. Insulated alligator and banana plug shorting leads

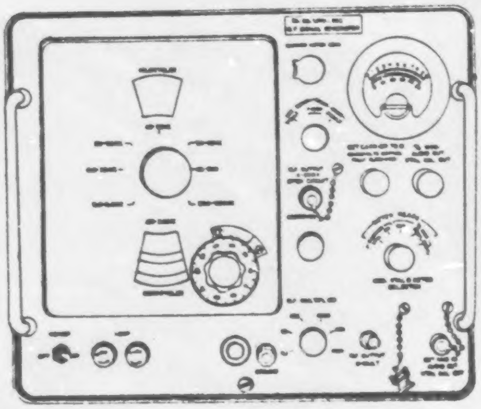
e. Signal Generator (1), AN/URM-25D

f. Oscilloscope (2), Model 545B

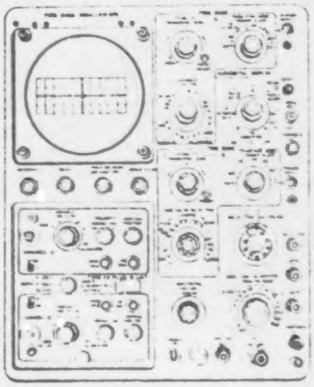
g. Electronic Voltmeter (3)

h. Dual dummy mixer (4)

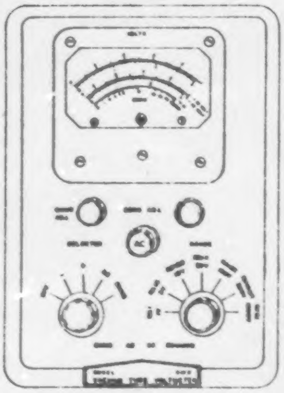
i. Insulated screw driver



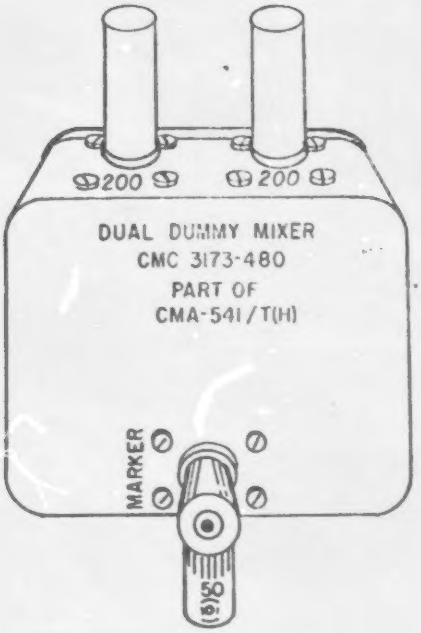
(1)



(2)



(3)


200
200
DUAL DUMMY MIXER
CMC 3173-480
PART OF
CMA-541/T(H)
MARKER
50
(5)

(4)

SE-1

PRE-TEST SET-UP

a. Make an operational checkout of the Radar set as outlined in Section A, Part V.

b. When you have completed the checkout and are sure that the Radar is operating properly, leave the Doppler Test Harness connected to the set.

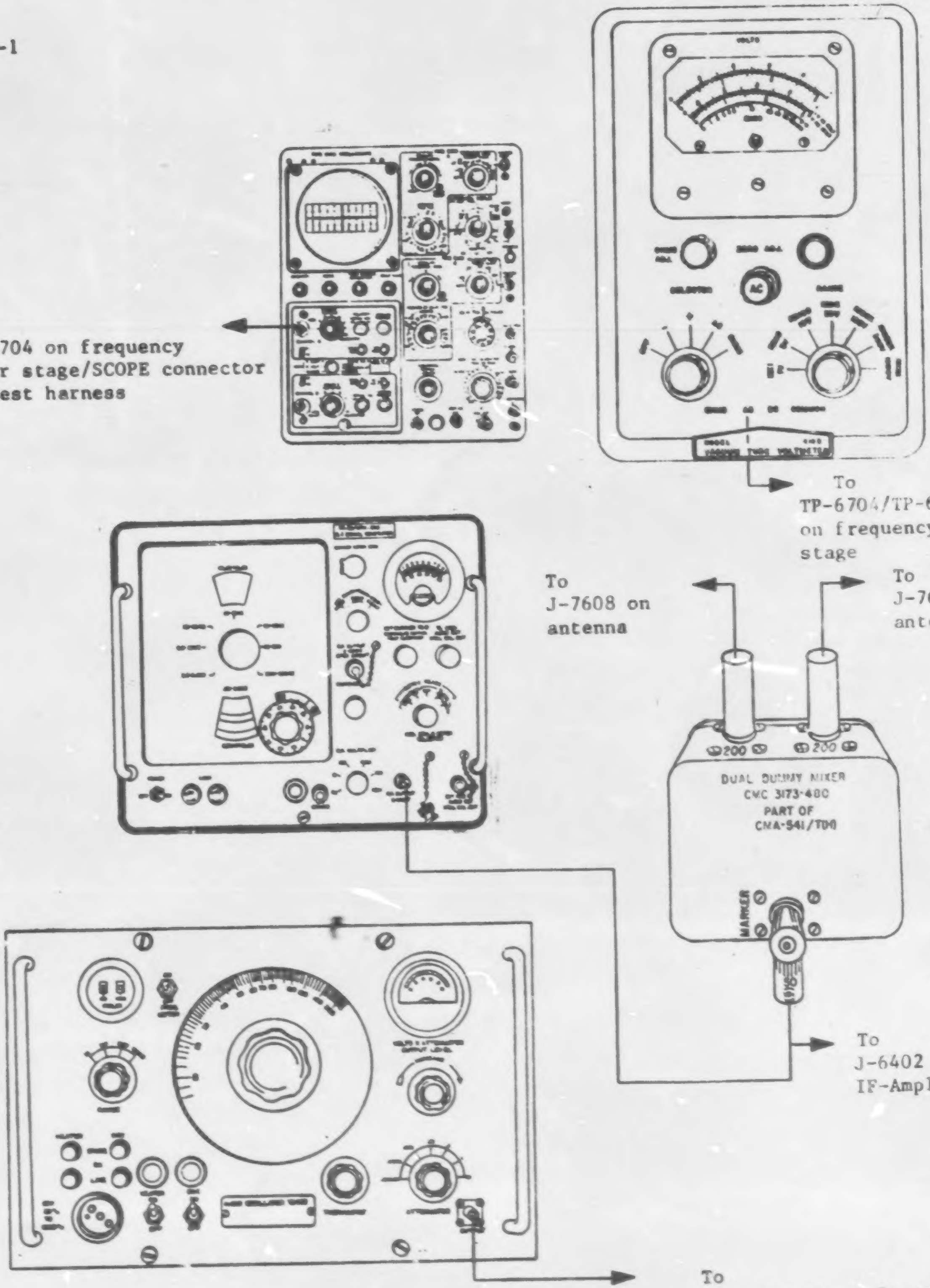
c. Review the technician's Test Instructions to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions.

b. Note the time and have the technician begin the test.

c. When the technician has completed his equipment hook-up, check it for ground safety hazards before permitting him to apply power (see opposite page).


200
200
DUAL DUMMY MIXER
CMC 3173-480
PART OF
CNA-541/TDN
MARKER

To
TP-6704 on frequency
mixer stage/SCOPE connector
on test harness

To
TP-6704/TP-6705
on frequency mixer
stage

To
J-7608 on
antenna

To
J-7603 on
antenna

To
J-6402 on
IF-Amplifier

To
"Input A Mixer Stage
Frequency" on test harness

PERFORMANCE EVALUATION PROCEDURES

a. When the technician announces that he has found the AGC circuit within tolerance limits, check his work as follows:

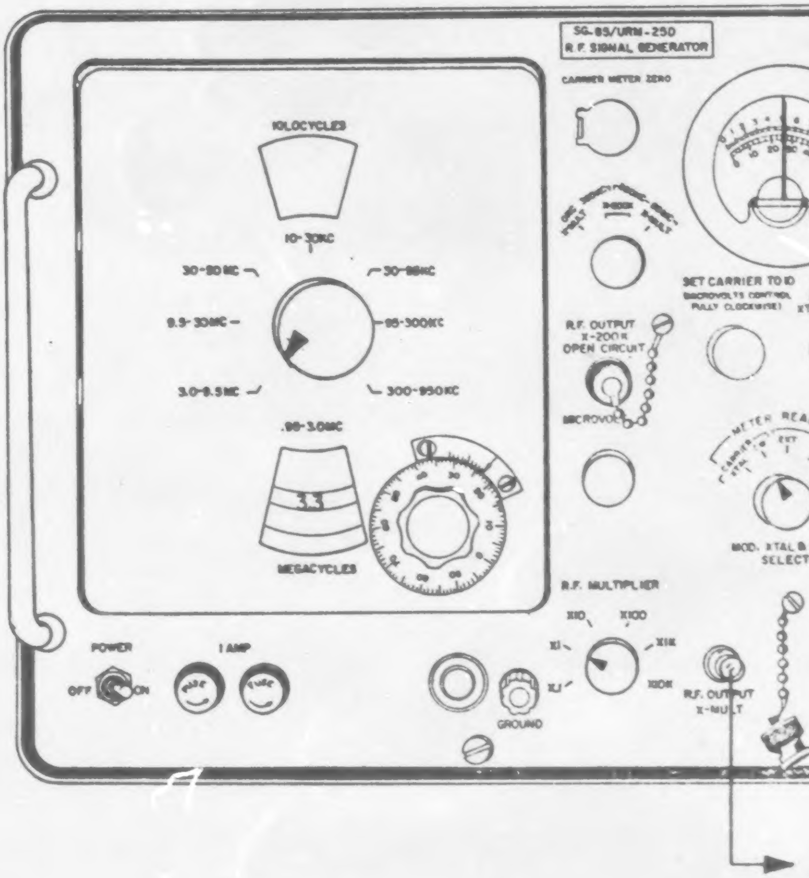
   1. Check the Signal Generator to determine that it has been connected properly. See opposite page for reference.

   2. Check the control settings on the Signal Generator to determine that they are set properly. See opposite page for reference.

b. Complete the technician's Performance Evaluation Sheet.

POST TEST RECOVERY

a. Have the technician disconnect the equipment that he set up and replace it in its original location.


SG-85/URM-25D
R.F. SIGNAL GENERATOR
CARRIER METER ZERO
KILOCYCLES
10-30KC
30-90KC
95-300KC
300-950KC
.95-3.0MC
3.0-9.5MC
9.5-30MC
30-80MC
3.3
MEGACYCLES
R.F. OUTPUT
X-200K
OPEN CIRCUIT
MICROVOLTS
SET CARRIER TO 10
MICROVOLTS CONTROL
FULLY CLOCKWISE
% MOD.
AUDIO OUT
XTAL CAL OUT
METER READS
MOD. XTAL & METER
SELECTOR
R.F. MULTIPLIER
X1
X10
X100
X1K
X10K
X.1
R.F. OUTPUT
X-MULT
EXT. MOD IN
AUDIO OUT
XTAL CAL. OUT
POWER
OFF
ON
1 AMP
FUSE
FUSE
GROUND

J-6402 on
IF Amplifier

TEST ADMINISTRATOR INSTRUCTIONS

TEST

SE-2, Doppler Generator, CMA-546 Usage

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV

b. T. O. 12P5-2APN147-2 or Applicable Technical Data

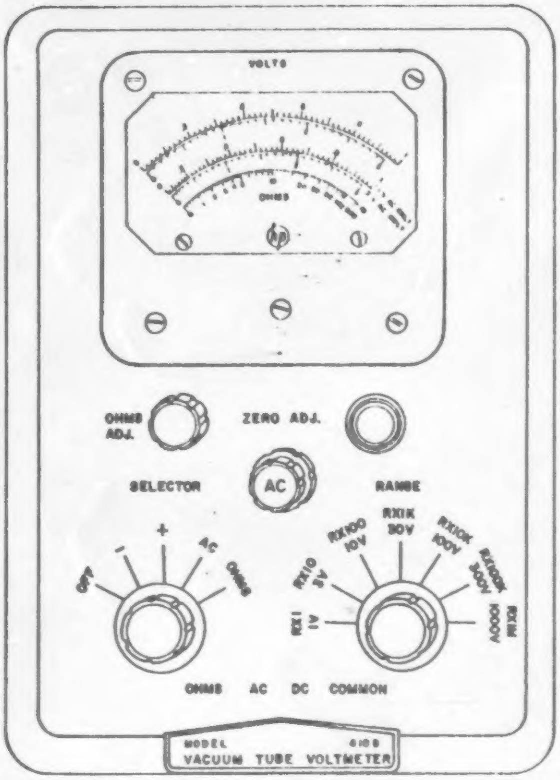
c. Coaxial cables and adaptors

d. Electronic Voltmeter (1)

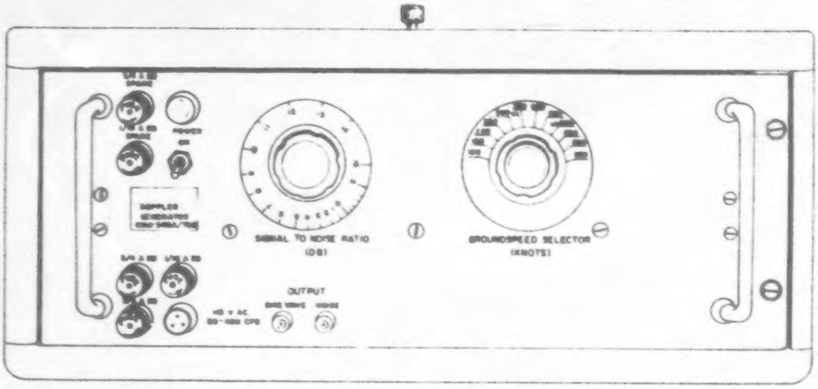
e. Stop watch (3)

f. Insulated Screw Driver

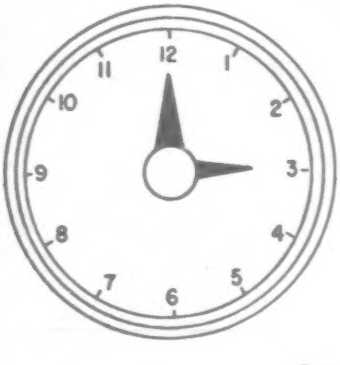
g. Doppler Generator (2), CMA-546


VOLTS
OHMS
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS
AC
DC
COMMON
MODEL
410B
VACUUM TUBE VOLTMETER

(1)


POWER
ON
DOPPLER GENERATOR
SIGNAL TO NOISE RATIO (DB)
GROUNDSPEED SELECTOR (KNOTS)
OUTPUT
SINE WAVE
NOISE

(2)


12
1
2
3
4
5
6
7
8
9
10
11

(3)

SE-2

PRE-TEST SET-UP

a. Make an operational checkout of the radar set as outlined in Section A, Part V.

b. When you have completed the checkout and are sure that the radar is operating properly, leave the Doppler Test Harness connected to the set.

c. Review the technician's Test Instructions to familiarize yourself with them.

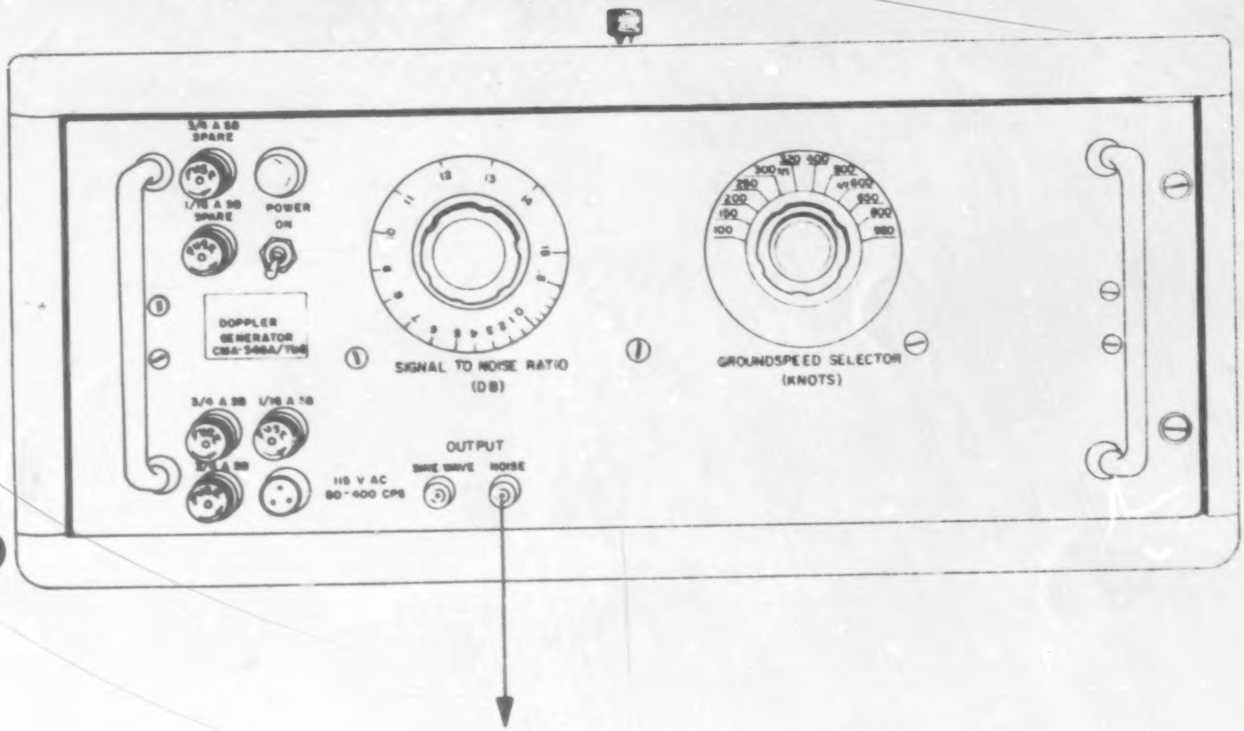
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions.

b. Note the time and have the technician begin the test.

c. When the technician has completed his equipment hook-up, check it for ground safety hazards before permitting him to apply power (see opposite page).

SE-2


3/4 A SB
SPARE
1/16 A SB
SPARE
POWER
ON
DOPPLER
GENERATOR
SIGNAL TO NOISE RATIO
(DB)
GROUNDSPEED SELECTOR
(KNOTS)
3/4 A SB
1/16 A SB
3/4 A SB
115 V AC
60-400 CPS
OUTPUT
SINE WAVE
NOISE

To J-7101 on test
panel of frequency tracker

PERFORMANCE EVALUATION PROCEDURES

a. When the technician announces that he has found the Lock Check Operation to be within tolerance limits, check his work as follows:

   1. Check to see that he has correctly connected the Doppler Generator. See page 185 for reference.

   2. Have the technician demonstrate the use of the Doppler Generator. Observe his performance and compare it with the procedures listed on opposite page.

b. Complete the technician's Performance Evaluation Sheet.

POST-TEST RECOVERY

a. Have the technician disconnect the equipment that he set up and replace it in its original location.

SE-2

LOCK-CHECK OPERATION TEST PROCEDURES

a. With the test harness POWER switch on, set the GROUND SPEED SELECTOR at 200 knots and the GROUND SPEED CAPS INDICATOR at 215 knots.

b. Check indicators for following results:

1. the ground speed should decrease to 200 knots;
2. the memory warning light should go out;
3. the "OFF" flag should disappear.

TEST ADMINISTRATION INSTRUCTIONS

TEST SE-3

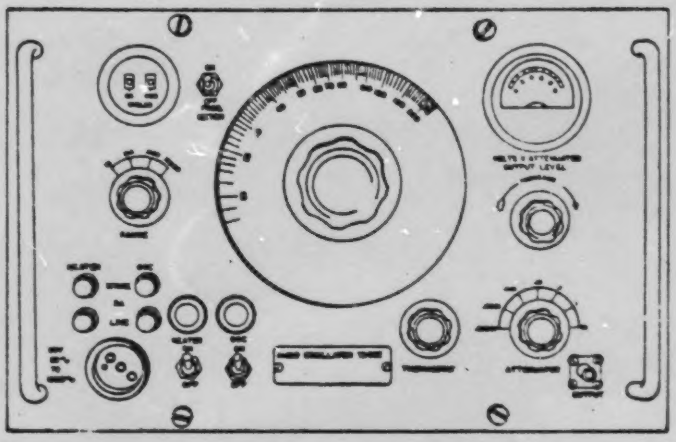
Audio Oscillator, TS-382 Usage

TIME ALLOTTED

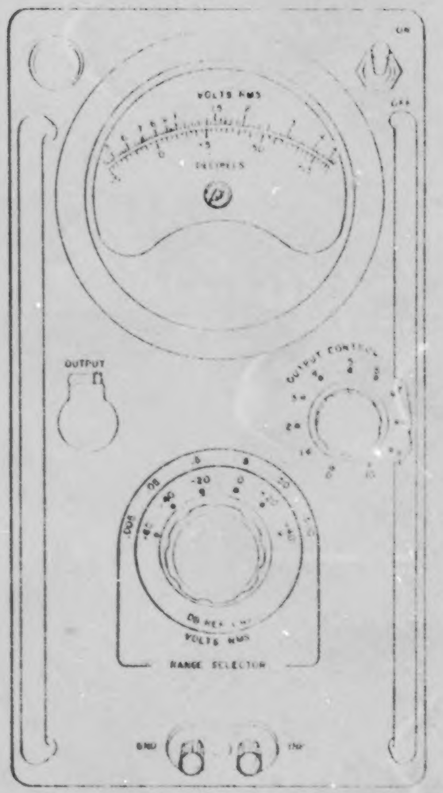
30 minutes

SUPPORT MATERIALS REQUIRED

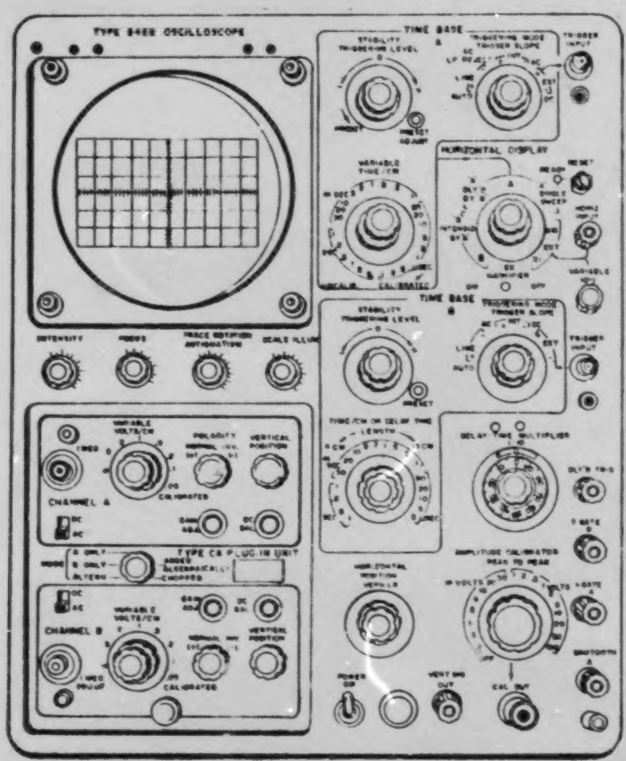
a. Bench test set-up as described in Section A, Part IV
b. T.O. 12P5-2APN147-2 or Applicable Technical Data
c. Coaxial Cables and Adaptors
d. Insulated Alligator and Banana Plug Shorting Leads
e. Audio Oscillator (1), TS-382
f. Electronic Voltmeter (2), ME-26 or equivalent
g. Tektronics Oscilloscope (3), Model 545B
h. Extension Cables
i. Insulated Screwdriver



(1)


VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
ON
OFF

(2)


TIME BASE
A
STABILITY
TRIGGERING LEVEL
TRIGGERING MODE
TRIGGER SLOPE
TRIGGER INPUT
HORIZONTAL DISPLAY
VARIABLE
TIME/CM
RESET
INTENSITY
FOCUS
SCALE ILLUM
CHANNEL A
CHANNEL B
CALIBRATED
VERTICAL POSITION
TIME BASE
B
DELAY TIME MULTIPLIER
AMPLITUDE CALIBRATOR
PEAK TO PEAK
HORIZONTAL POSITION
VERNIER
CAL OUT

(3)

PRE-TEST SET-UP

a. Make an operational checkout of the radar set as outlined in Section A, Part V.

b. When you have completed the checkout and are sure that the radar is operating properly, leave the Doppler Test Harness connected to the set.

c. Review the technician's Test Instructions to familiarize yourself with them.

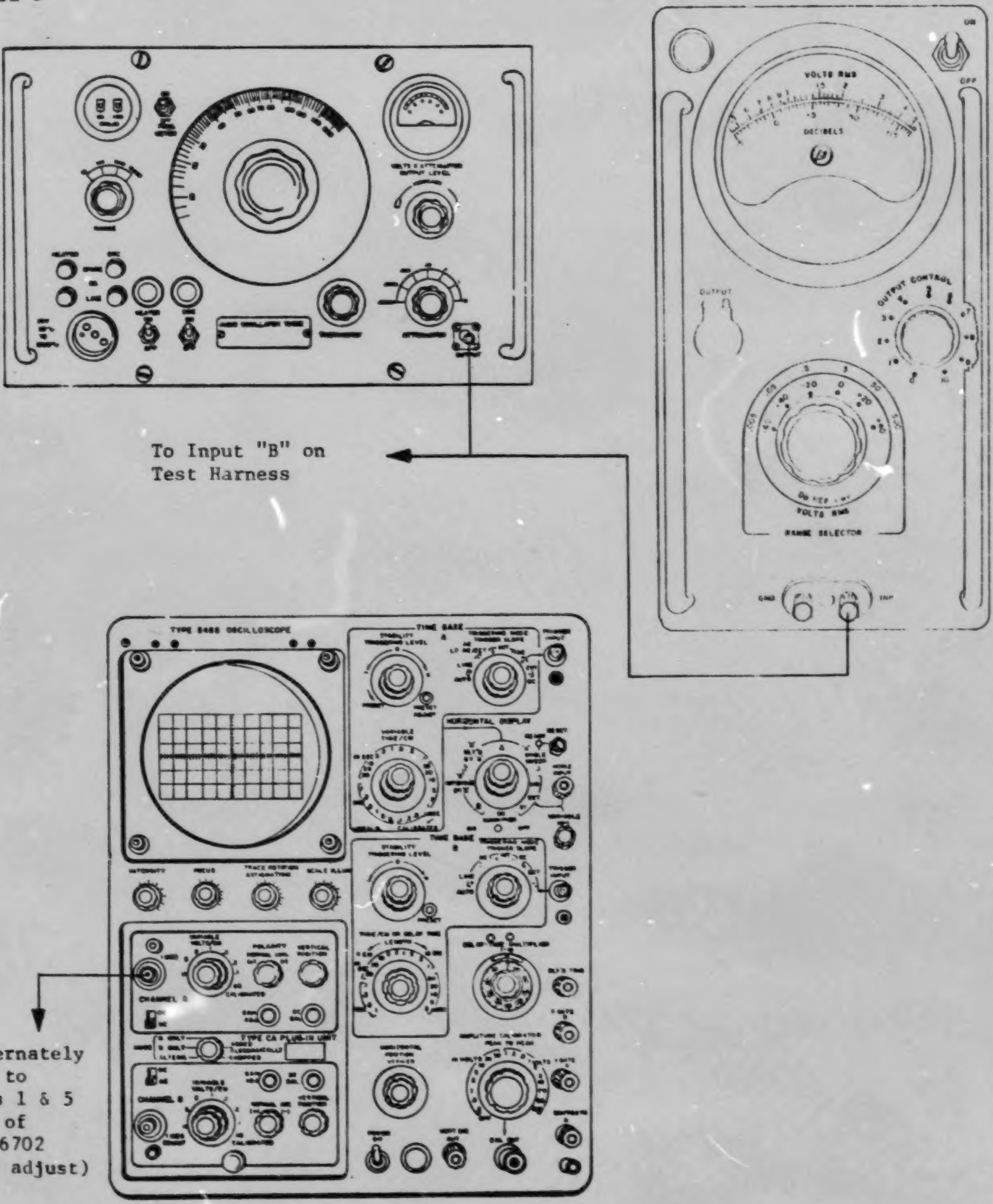
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions.

b. Note the time and have the technician begin the test.

c. When the technician has completed his equipment hook-up, check it for ground safety hazards before permitting him to apply power (see opposite page).

SE-3


VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
INP
ON
OFF
TYPE 546B OSCILLOSCOPE
TIME BASE
HORIZONTAL DISPLAY
CHANNEL 1
CHANNEL 2
TYPE CA PLUG-IN UNIT

To Input "B" on
Test Harness

Alternately
to
Pins 1 & 5
of
T-6702
(R-6709 adjust)

PERFORMANCE EVALUATION PROCEDURES

a. When the technician announces that he has found the Second Balanced Modulator V-6709 Cathode Balance Adjustment to be within tolerance limits, check his work as follows:

   1. Check to see that he has correctly connected the Audio Oscillator. See opposite page for reference.

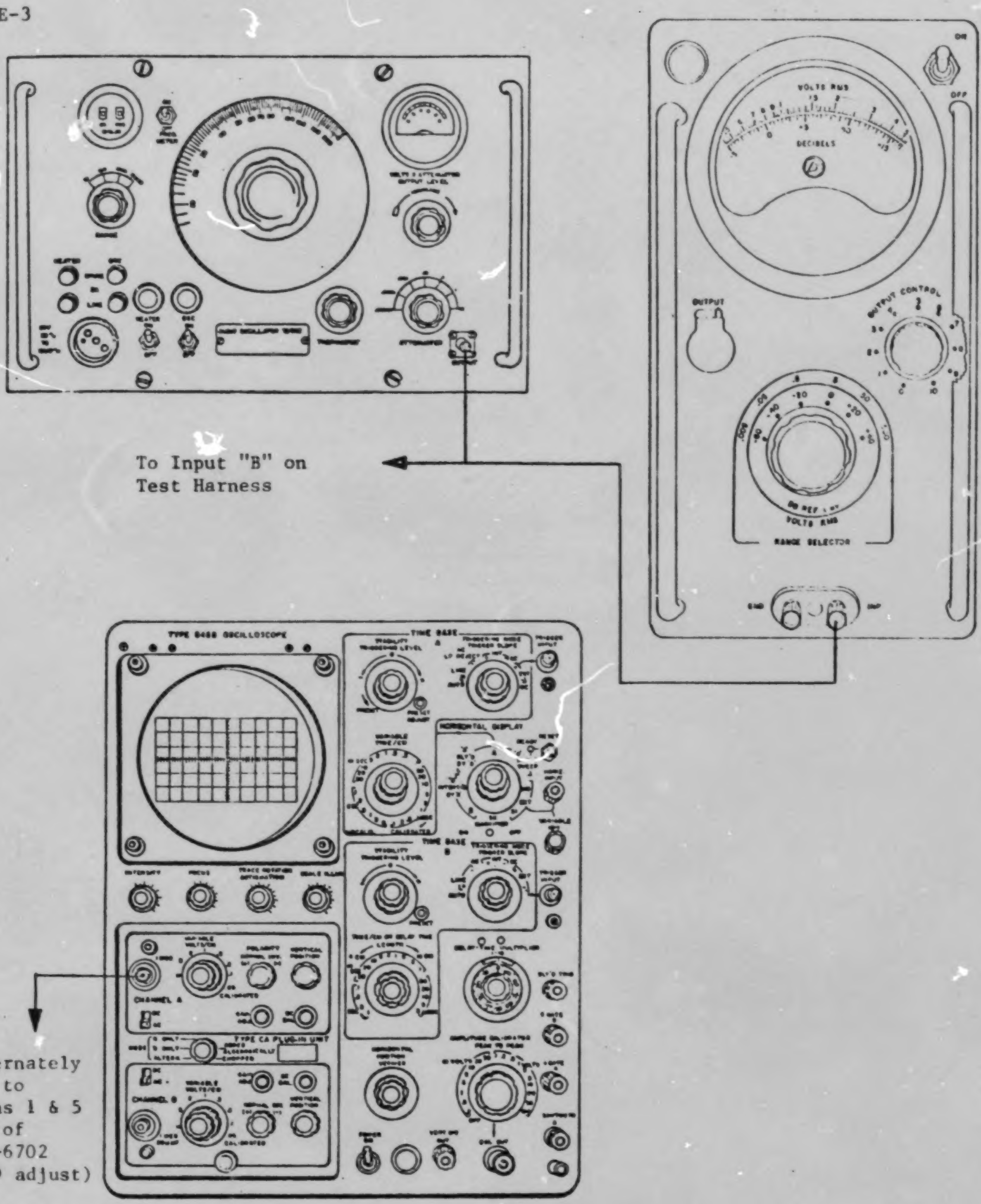
   2. Have the technician demonstrate the use of the Audio Oscillator. Observe his performance and compare it with the procedures listed on page 194.

b. Complete the technician's Performance Evaluation Sheet.

POST-TEST RECOVERY

a. Have the technician disconnect the equipment that he set up and replace it in its original location.

SE-3


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
OSCILLOSCOPE
TIME BASE
HORIZONTAL DISPLAY
TIME BASE
CHANNEL A
TYPE CA PLUG-IN UNIT
CHANNEL B

To Input "B" on
Test Harness

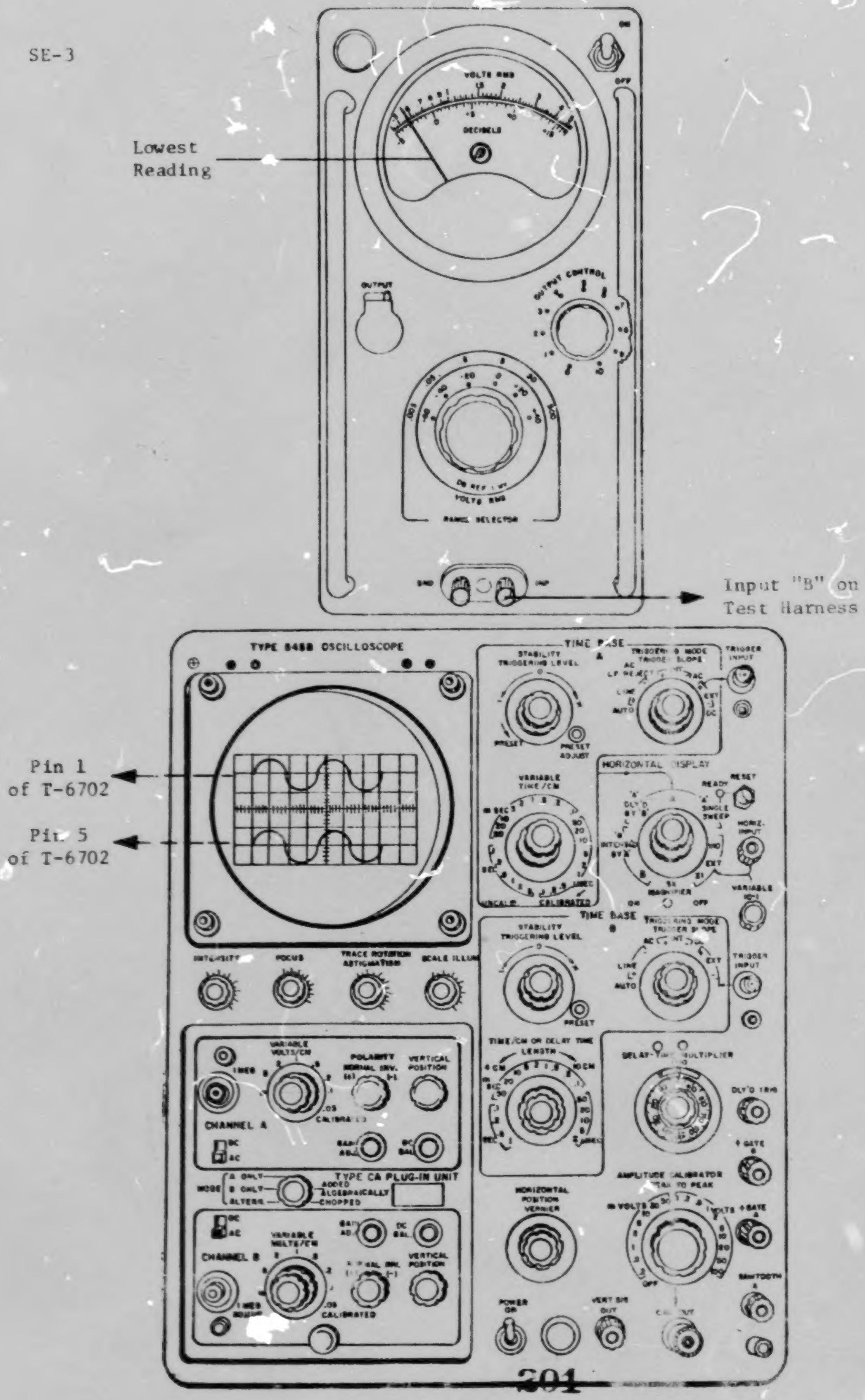
Alternately
to
Pins 1 & 5
of
T-6702
(R-6709 adjust)

SECOND BALANCED MODULATOR ADJUSTMENT TEST PROCEDURES

a. R-6747 adjusted to null (voltage reading should be less than 0.05).

b. R-6709 adjusted to equal voltage reading on scope.

SE-3


Lowest Reading
VOLTS RMS
DECIBELS
ON
OFF
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
INP
Input "B" on Test Harness
TYPE 545B OSCILLOSCOPE
Pin 1 of T-6702
Pin 5 of T-6702
TIME BASE A
STABILITY
TRIGGERING LEVEL
PRESET
PRESET ADJUST
TRIGGERING MODE
TRIGGER SLOPE
TRIGGER INPUT
VARIABLE TIME/CM
CALIBRATED
HORIZONTAL DISPLAY
RESET
READY
SINGLE SWEEP
HORIZ. INPUT
5X MAGNIFIER
VARIABLE 10-1
TIME BASE B
INTENSITY
FOCUS
TRACE ROTATION ASTIGMATISM
SCALE ILLUM
VARIABLE VOLTS/CM
POLARITY
VERTICAL POSITION
CHANNEL A
TYPE CA PLUG-IN UNIT
MODE
A ONLY
B ONLY
ALTERN.
ADDED ALGEBRAICALLY
CHOPPED
CHANNEL B
TIME/CM OR DELAY TIME LENGTH
DELAY-TIME MULTIPLIER
DLY'D TRIG
HORIZONTAL POSITION VERNIER
AMPLITUDE CALIBRATOR PEAK TO PEAK
POWER ON
VERT SIG OUT
CAL OUT
SAWTOOTH

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-1, Crystal, Y-6701, Removal and Replacement

TIME ALLOTTED

10 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

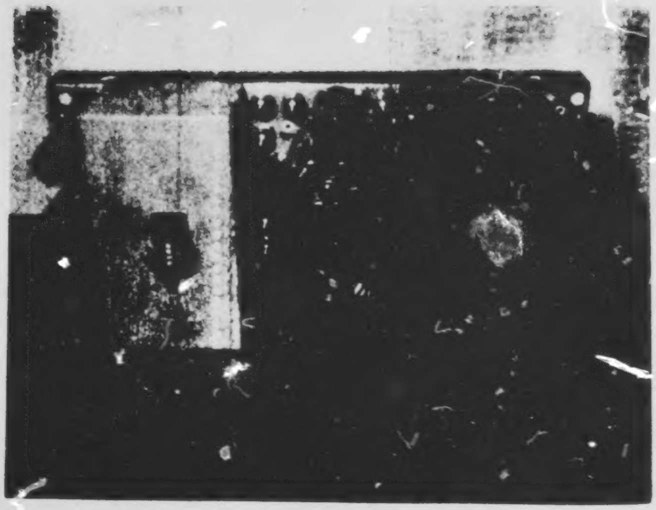
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

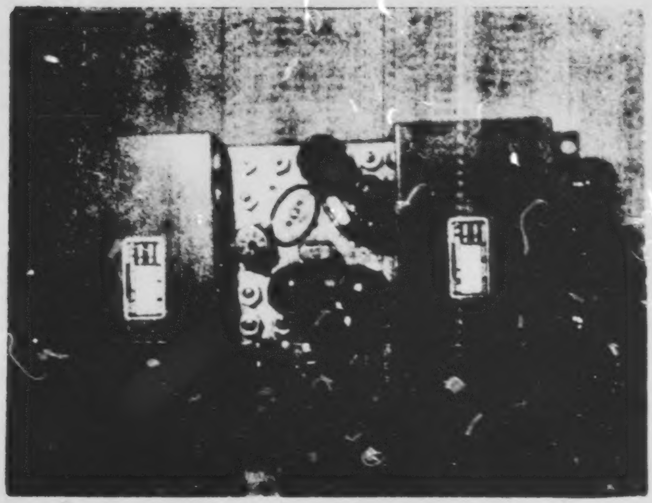
e. Have the technician replace the component he removed.

f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Radar set.



Frequency Mixer Stage, CV-1186/APN-147 With Crystal, Y-6701 Installed (Circled)

Crystal, Y-6701



Frequency Mixer Stage, CV-1186/APN-147 With Crystal, Y-6701 Removed (Circled)

RR-1

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Radar set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-2, RF Oscillator, V-6201, Removal and Replacement

TIME ALLOTTED

20 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

RR-2

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

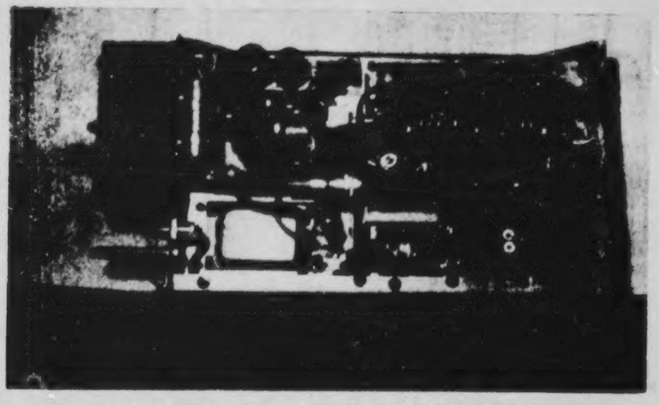
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

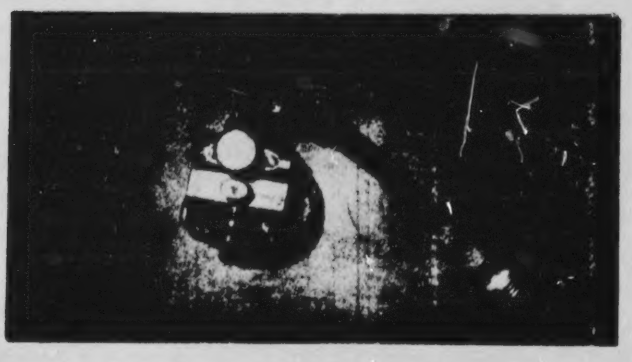
d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

e. Have the technician replace the component he removed.

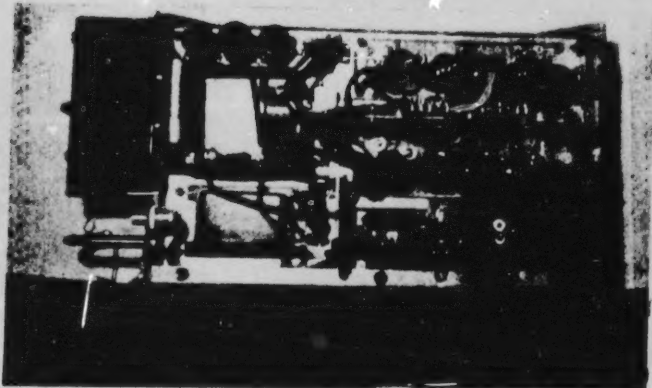
f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Radar set.



Radar Set With R-F Oscillator,
V-6201 Installed, (Circled)



R-F Oscillator, V-6201



Radar Set With R-F Oscillator,
V-6201 Removed (Circled)

RR-2

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Radar set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-3, Frequency Mixer, CV-1186/APN-147, Removal and Replacement

TIME ALLOTTED

10 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

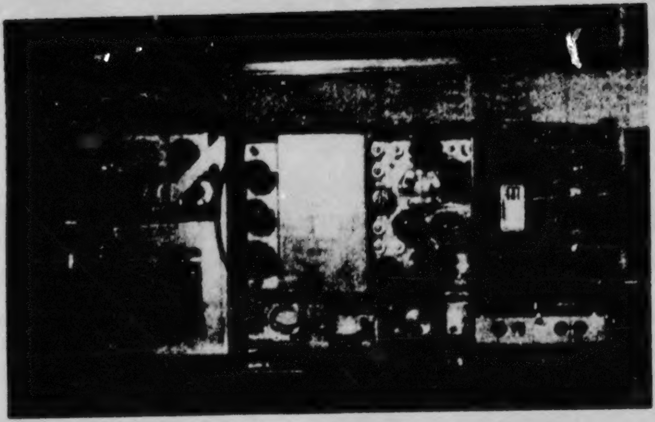
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

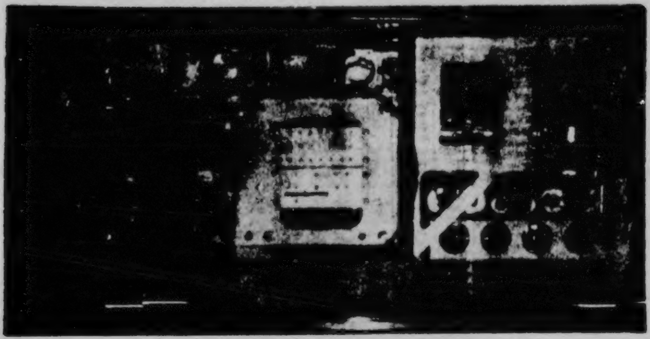
e. Have the technician replace the component he removed.

f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Radar set.



Radar Set With Frequency Mixer,
CV-1186/APN-147 Installed (Circled)

Frequency Mixer
CV-1186/APN-147



Radar Set With Frequency Mixer,
CV-1186/APN-147 Removed (Circled)

RR-3

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Radar set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-4, Signal Comparator, CMA-213/APN-147, Removal and Replacement

TIME ALLOTTED

10 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

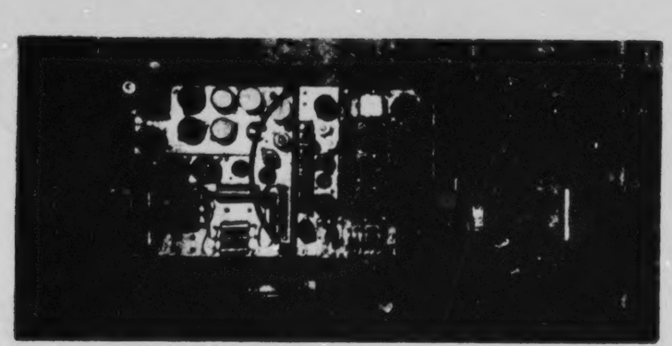
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

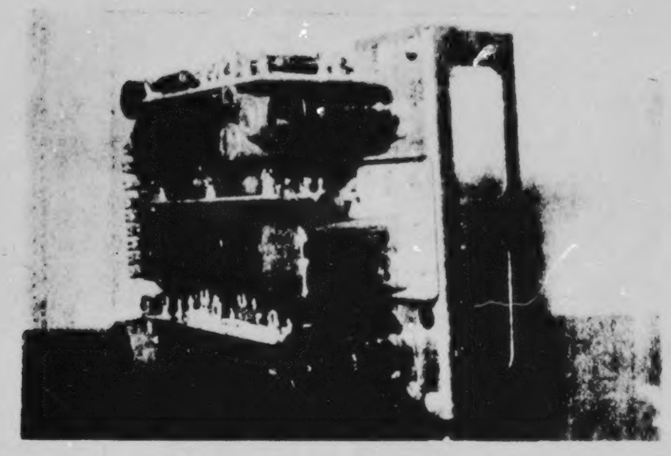
d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

e. Have the technician replace the component he removed.

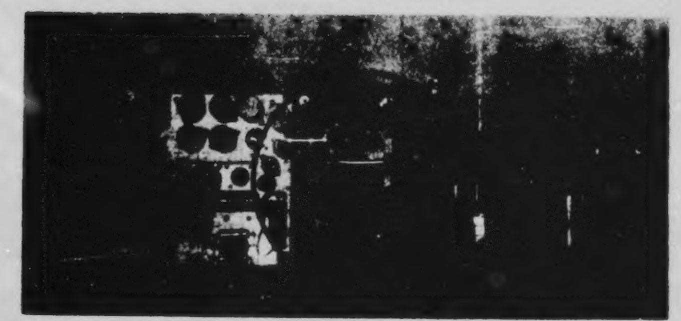
f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Radar set.



Radar Set With Signal Comparator,
CM-213/APN-147 Installed (Circled)



Signal Comparator,
CM-213/APN-147



Radar Set With Signal Comparator,
CM-213/APN-147 Removed (Circled)

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Radar set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-5, Sequential Timer, TD-505A/APN-147, Removal and Replacement

TIME ALLOTTED

10 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

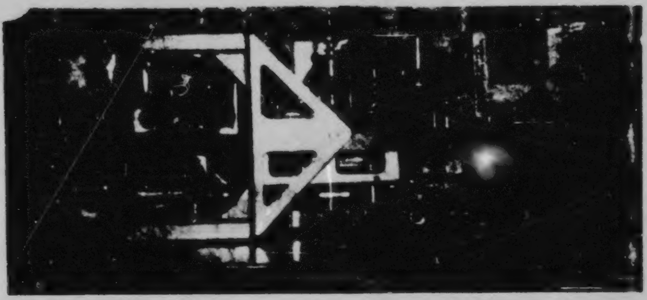
c. Note the time and instruct the technician to begin the test.

d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

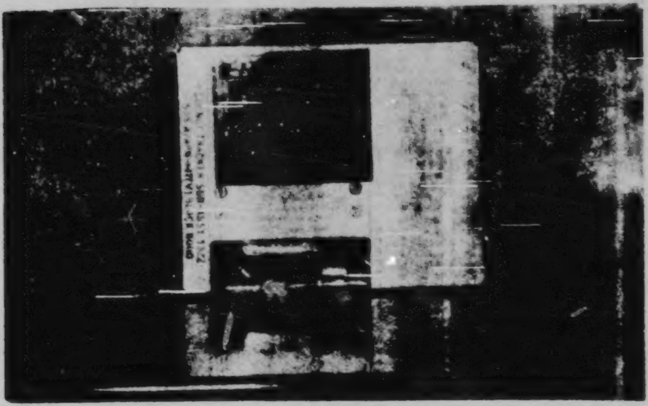
e. Have the technician replace the component he removed.

f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Radar set.

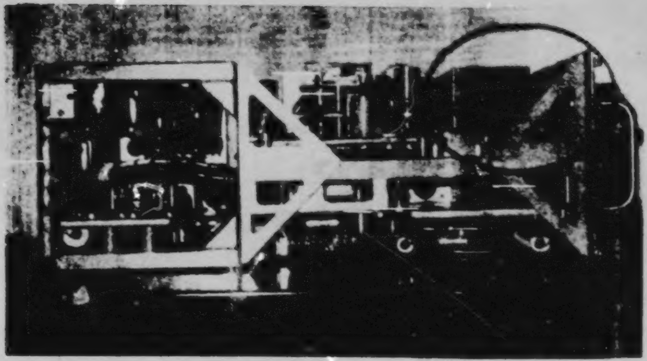
RR-5



Radar Set With Sequential Timer, TD-505A/APN-147 Installed (Circled)



Sequential Timer, TD-505A/APN-147



Radar Set With Sequential Timer, TD-505A/APN-147 Removed (Circled)

RR-5

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Radar set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-6, Crystal Mixer, CR-7602 (Side A), Removal and Replacement

TIME ALLOTTED

10 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

RR-6

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

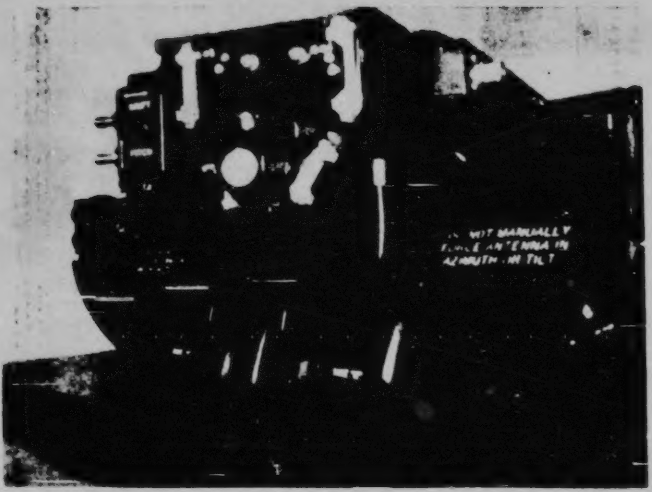
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

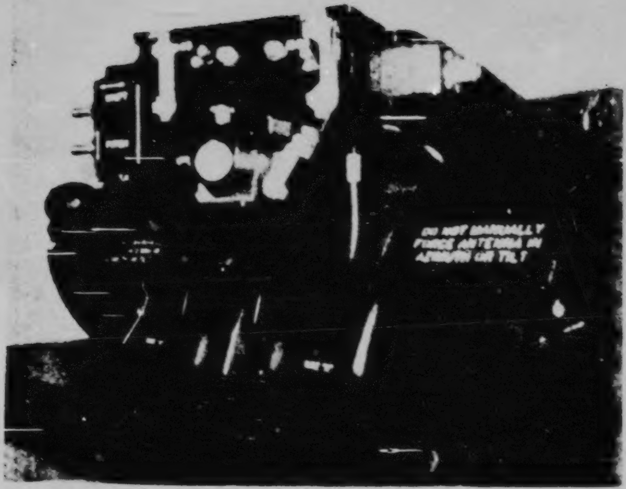
e. Have the technician replace the component he removed.

f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform a operational checkout of the Radar set.


DO NOT MANUALLY
FORCE ANTENNA IN
AZIMUTH OR TILT

Radar Set With Crystal Mixer,
CR-7602 (Side A) Installed (Circled)

Crystal Mixer,
CR-7602


DO NOT MANUALLY
FORCE ANTENNA IN
AZIMUTH OR TILT

Radar Set With Crystal Mixer,
CR-7602 (Side A) Removed (Circled)

RR-6

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Radar set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-7, Blower Motor Assembly, B-501 Removal and Replacement

TIME ALLOTTED

15 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.
b. Assorted hand tools, to include various size screw drivers.
c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

RR-7

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

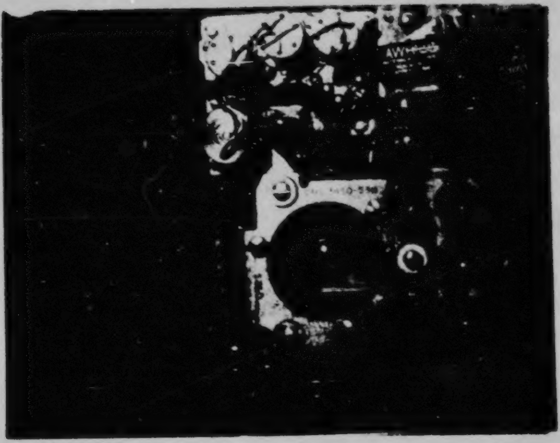
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

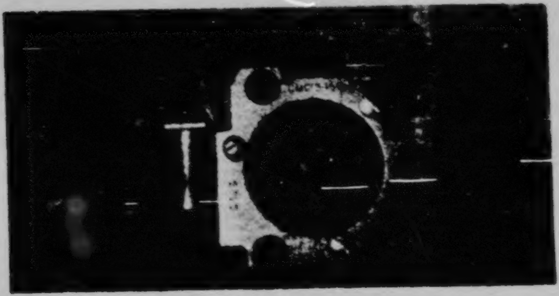
d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

e. Have the technician replace the component he removed.

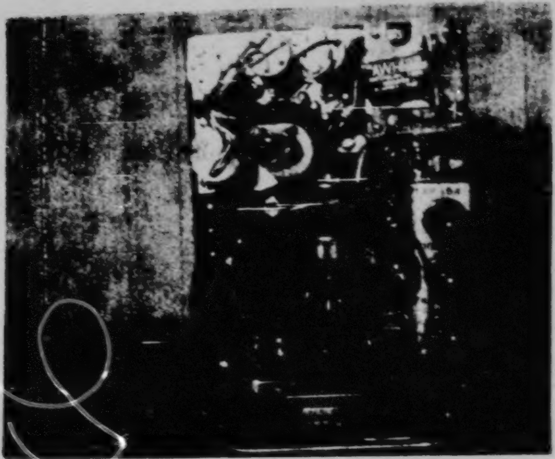
f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Computer set.



Computer Set With Blower Motor Assembly, B-501 Installed (Circled)



Blower Motor Assembly, B-501



Computer Set With Blower Motor Assembly, B-501 Removed (Circled)

RR-7

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Computer set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-8, Track Resolver Drive Assembly, Removal and Replacement

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

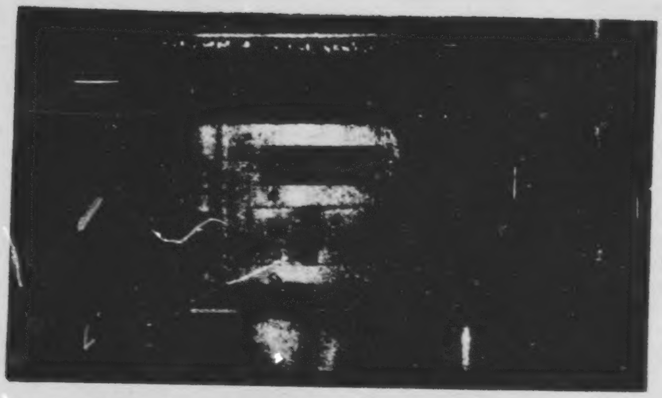
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

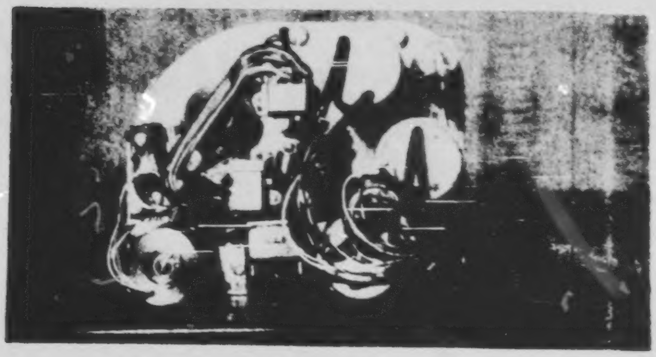
d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

e. Have the technician replace the component he removed.

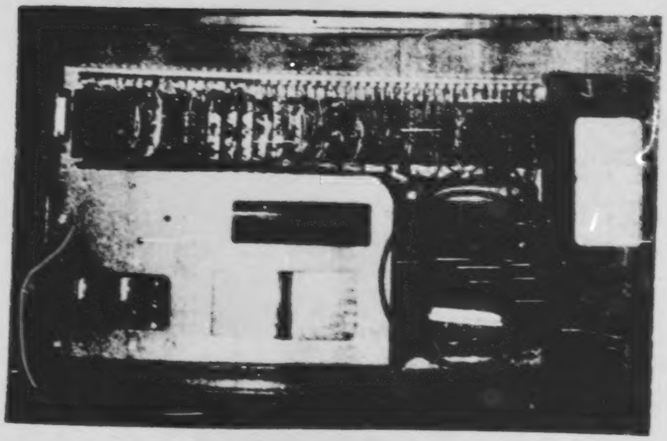
f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Radar set.



Computer Set With Track Resolver
Drive Assembly Installed (Circled)



Track Resolver
Drive Assembly



Computer Set With Track Resolver
Drive Assembly Removed (Circled)

RR-8

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Computer set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-9, Translator Drive Assembly, Removal and Replacement

TIME ALLOTTED

15 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

RR-9

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how to take the test.

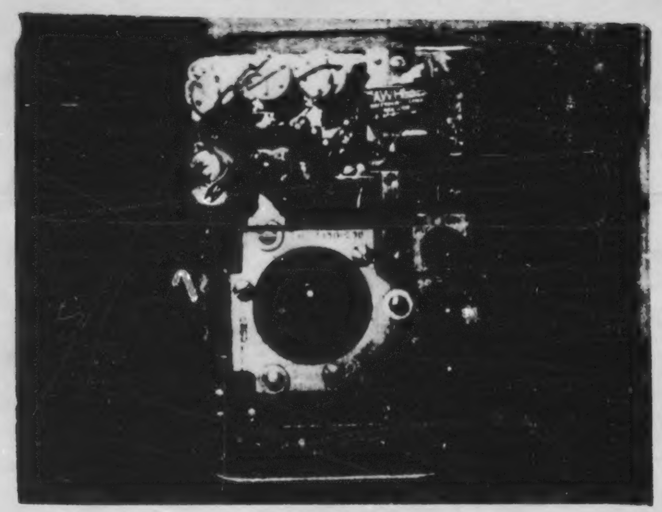
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

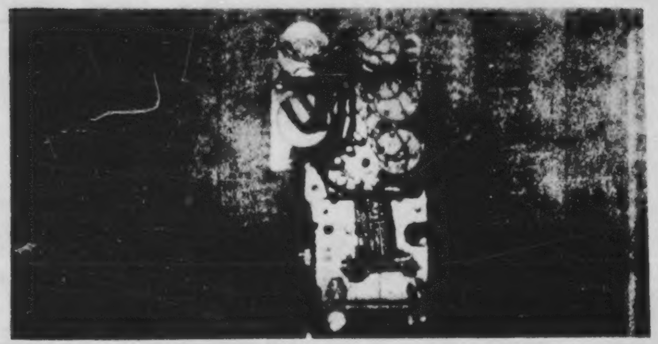
d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

e. Have the technician replace the component he removed.

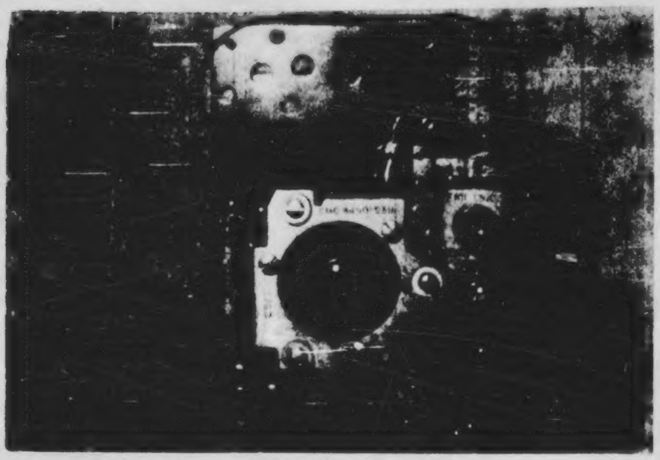
f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Computer set.



Computer Set With Translator
Drive Assembly Installed (Circled)



Translator Drive
Assembly



Computer Set With Translator
Drive Assembly Removed (Circled)

RR-9

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Computer set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

RR-10, Relay, K-410, Removal and Replacement

TIME ALLOTTED

20 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Assorted hand tools, to include various size screw drivers.

c. Technical Reference, such as T.O. 12P5-2APN147-2, or equivalent.

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. Review the technician's test instruction to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his test instructions and answer any questions he has about how [illegible] take the test.

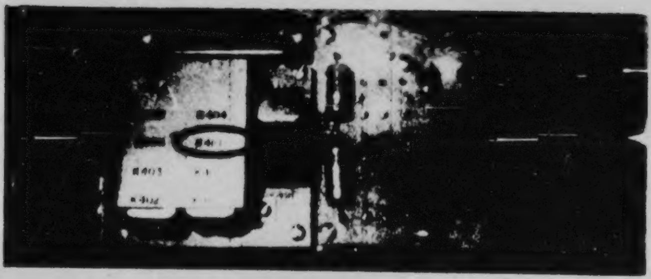
b. Have the technician enter his test identification number on his Performance Evaluation Sheet, and then collect it.

c. Note the time and instruct the technician to begin the test.

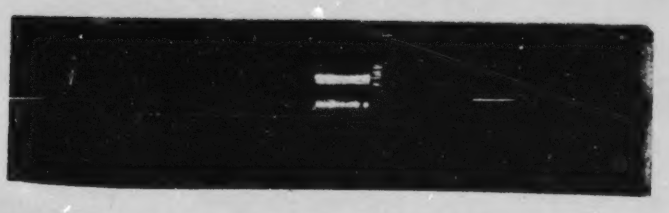
d. When the technician has completed the removal, examine the part to determine that it is the correct one. See Answer Key on opposite page.

e. Have the technician replace the component he removed.

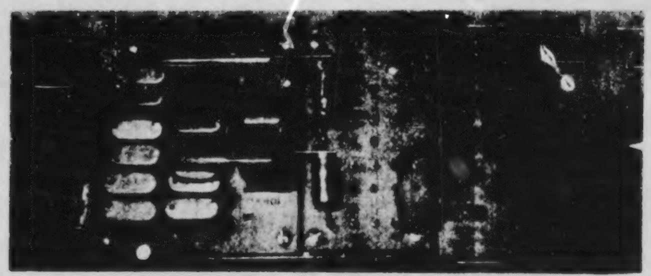
f. When the technician has completed the replacement, inspect the area for any obvious physical damage and then perform an operational checkout of the Computer set.



Relay Chassis Assembly, Computer Set
With Relay, K-410 Installed (Circled)



Relay, K410



Relay Chassis Assembly, Computer Set
With Relay, K-410 Removed (Circled)

RR-10

PERFORMANCE EVALUATION PROCEDURES

a. When the test is completed, answer the questions on the Performance Evaluation Sheet.

POST TEST RECOVERY

a. If the Computer set did not function properly after completion of the test, remove and re-install the same component the technician did.

b. If the set is still inoperative, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

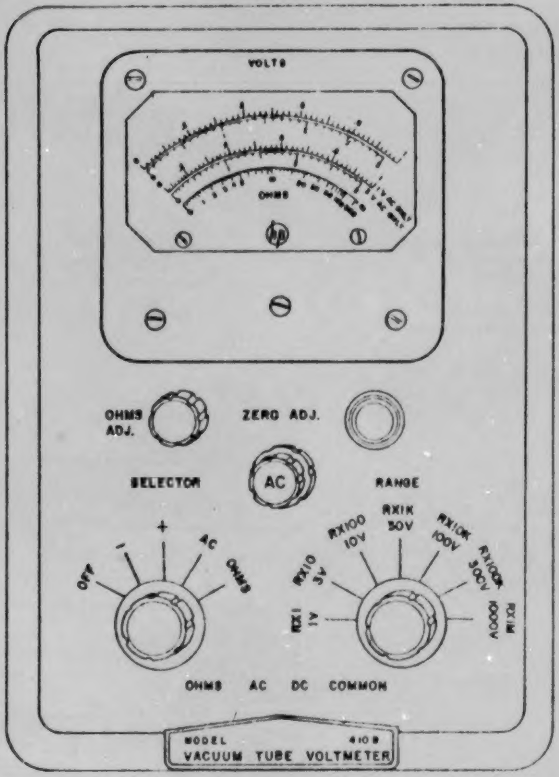
AD-1, Transmitter Output Power Adjustment

TIME ALLOTED

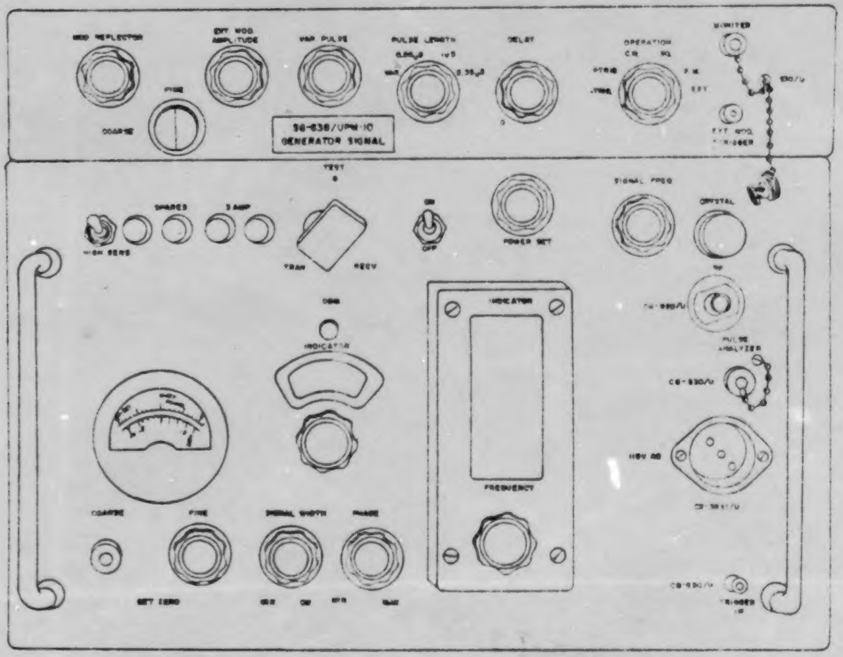
30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test Set-up as described in Section A, Part IV
b. T. O. 12P5-2APN147-2 or Applicable Technical Data
c. Coaxial Cables and Adaptors
d. Radar Test Set (2), AN/UPM-10 or equivalent
e. Digital Voltmeter (1) or equivalent
f. Insulated Screw driver


VOLTS
OHMS
OHMS ADJ.
ZERO ADJ.
AC
SELECTOR
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

(1)


MOD REFLECTOR
EXT MOD AMPLITUDE
VAR PULSE
PULSE LENGTH
DELAY
OPERATION
MONITOR
FINE
COARSE
SG-630/UPM-10
GENERATOR SIGNAL
EXT MOD TRIGGER
TEST
SPARES
3 AMP
HIGH SENS
TRAN
RECV
ON
OFF
POWER SET
SIGNAL FREQ
CRYSTAL
INDICATOR
FREQUENCY
PULSE ANALYZER
COARSE
FINE
SIGNAL WIDTH
PHASE
SET ZERO
TRIGGER

(2)

AD-1

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

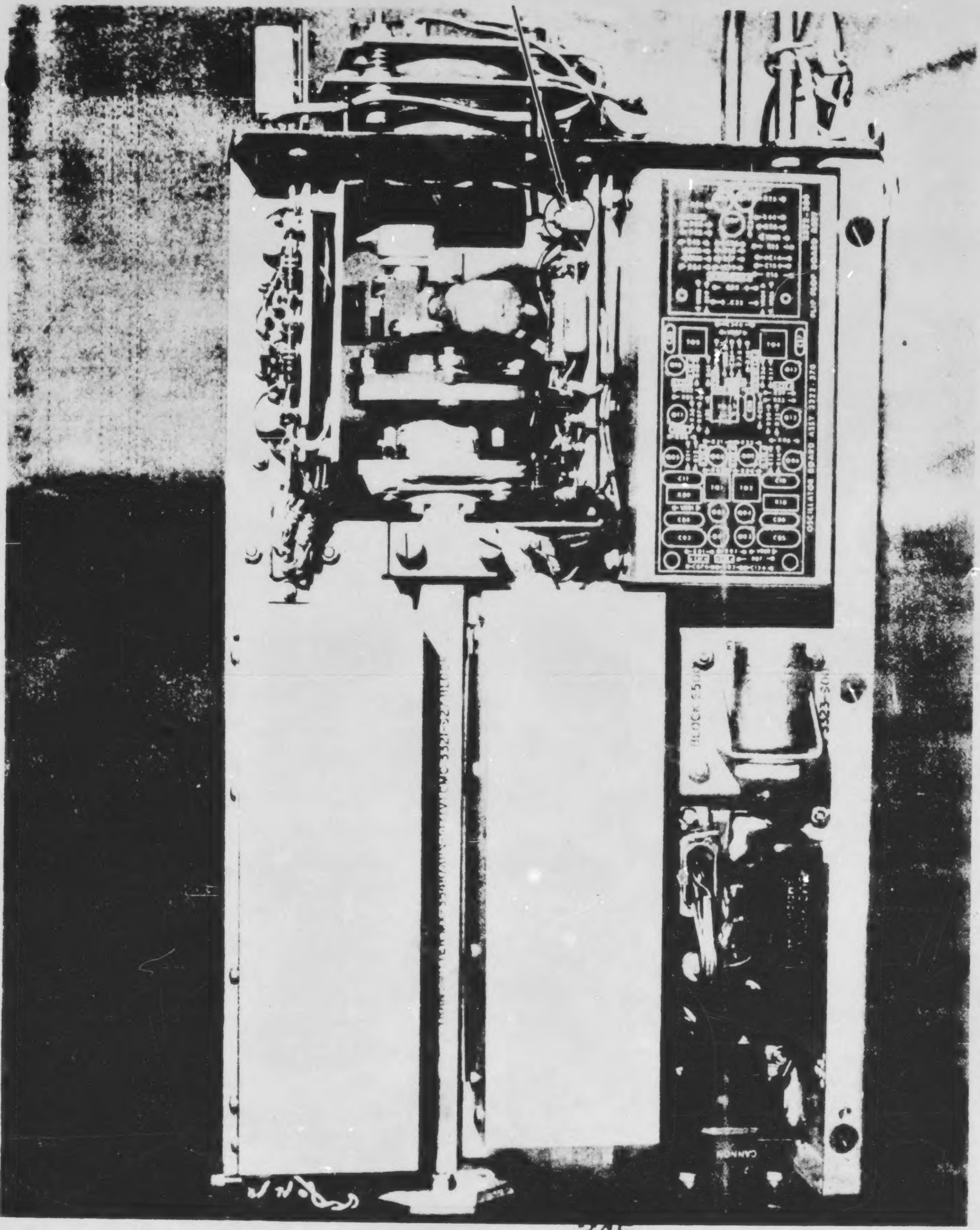
c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-6604. It is located on the Receiver/Transmitter as shown on opposite page. Note its position.

e. Rotate R-6604 ten 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.

AD-1


OSCILLATOR BOARD ASSY 3322-370
FLIP FLOP BOARD ASSY
CANNON

AD-1

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

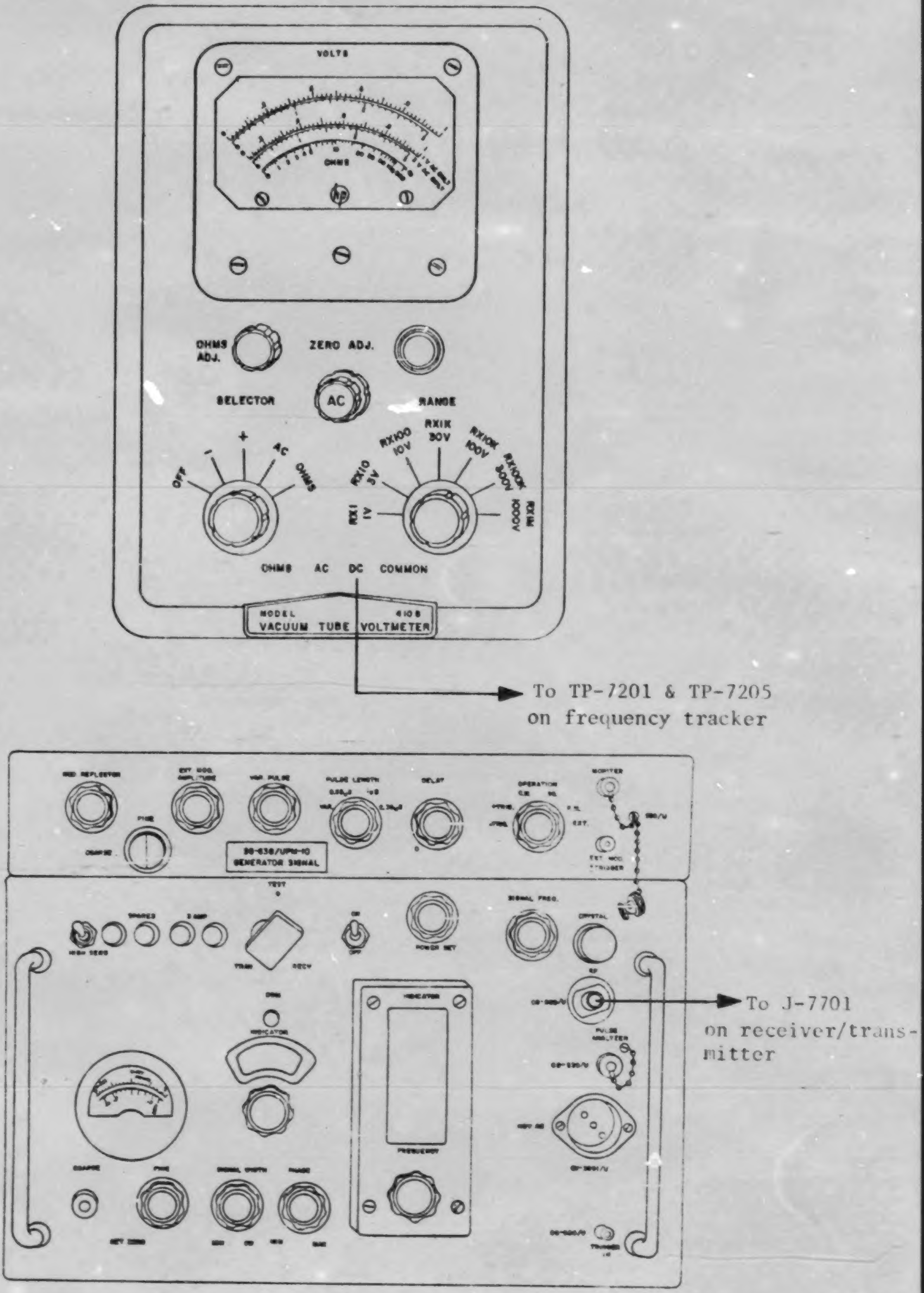
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the adjustment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this adjustment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


VOLTS
OHMS
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER
SG-638/UPM-10
GENERATOR SIGNAL

To TP-7201 & TP-7205
on frequency tracker

To J-7701
on receiver/transmitter

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the adjustment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Transmitter Output Power Adjustment is within tolerance limits.

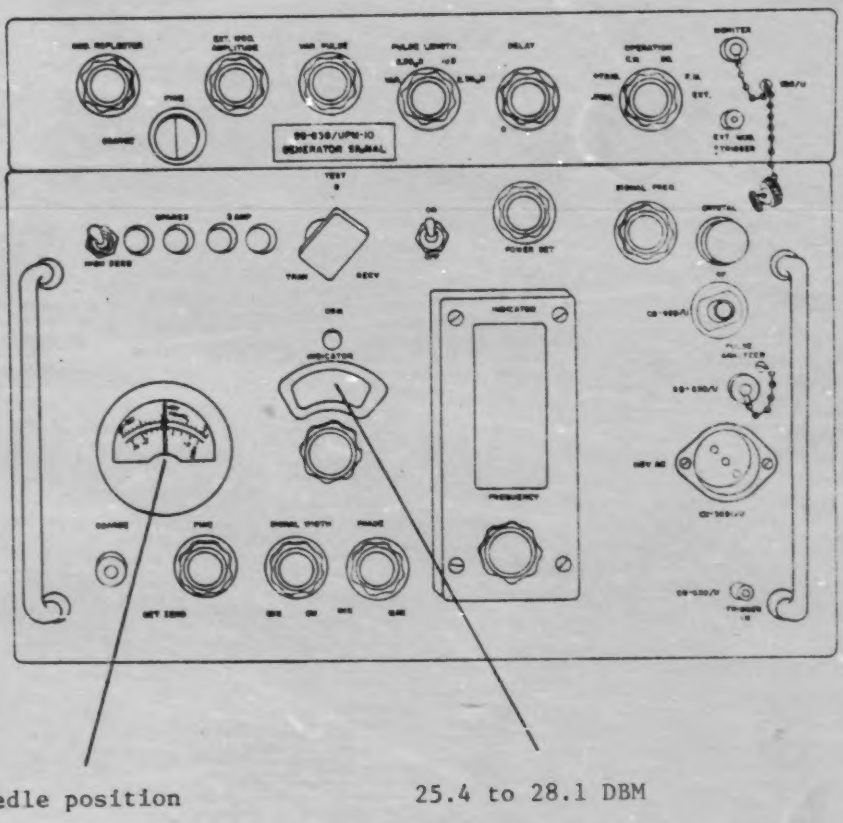
b. This is done as follows:

- UPM-10 DBM reading will be between 25.4 and 28.1 DBM with meter at BALANCE position. (DBM reading is power meter plus cable attenuation.) (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.

AD-1


EXT. MOD. AMPLITUDE
VAR PULSE
PULSE LENGTH
DELAY
OPERATION
SG-630/UPM-10
GENERATOR SIGNAL
TEST
SPARES
LAMP
ON
OFF
TRANS
RECV
POWER SET
SIGNAL FREQ.
CRYSTAL
INDICATOR
FREQUENCY
COARSE
FINE
SIGNAL WIDTH
PHASE
SET ZERO
needle position
25.4 to 28.1 DBM

POST-TEST RECOVERY

a. If technician successfully accomplished the adjustment, recovery is completed.

b. If technician was unable to perform the adjustment, return R-6604 to its original position.

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

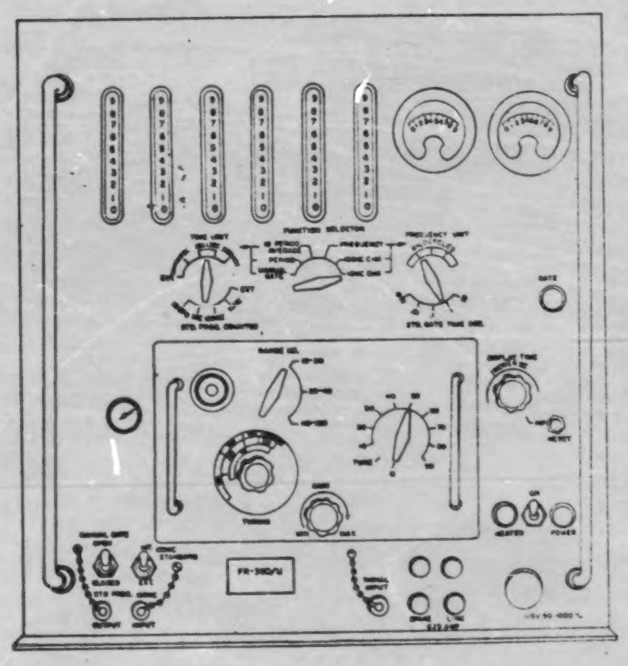
AD-2, Modulator Adjustment

TIME ALLOTTED

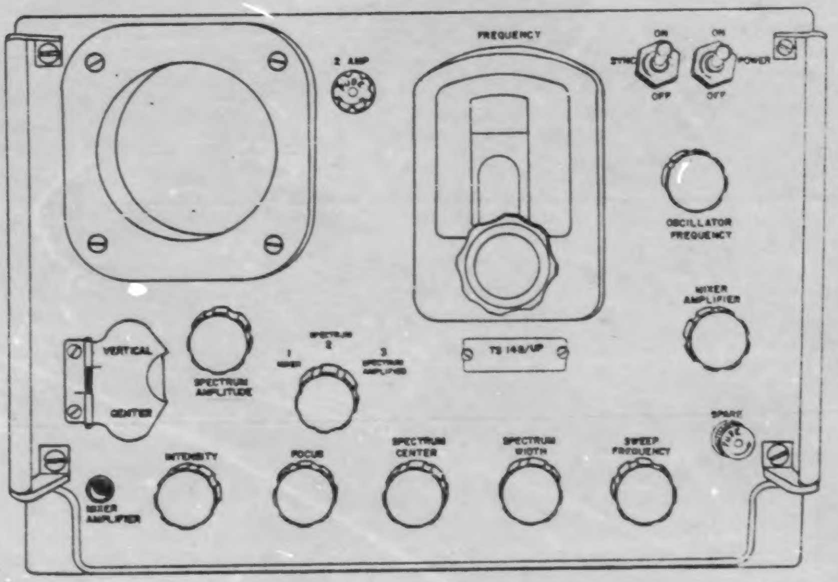
30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test set-up as described in Section A, Part IV
b. T. O. 12P5-2APN147-2 or Applicable Technical Data
c. Coaxial Cables and Adaptors
d. Frequency Meter (1), AN/USM-26 or equivalent
e. Radar Test Set (2), AN/UPM-33 or equivalent
f. Insulated Screw driver
g. Insulated Alligator and Banana Plug Shorting Leads


FUNCTION SELECTOR
TIME UNIT
FREQUENCY UNIT
STD. FREQ. COUNTED
STD. GATE TIME SEL.
GATE
RANGE SEL.
TUNING
RESET
HEATER
ON
POWER
OUTPUT
INPUT
SIGNAL INPUT

(1)


FREQUENCY
2 AMP
FUSE
ON
SYNC
OFF
ON
POWER
OFF
OSCILLATOR
FREQUENCY
MIXER
AMPLIFIER
VERTICAL
CENTER
SPECTRUM
AMPLITUDE
1
MIXER
SPECTRUM
2
3
SPECTRUM
AMPLIFIED
TS 148/UP
SPARE
FUSE
INTENSITY
FOCUS
SPECTRUM
CENTER
SPECTRUM
WIDTH
SWEEP
FREQUENCY
MIXER
AMPLIFIER

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to determine that it is functioning properly. Use the procedures outlined in Section A, Part V.

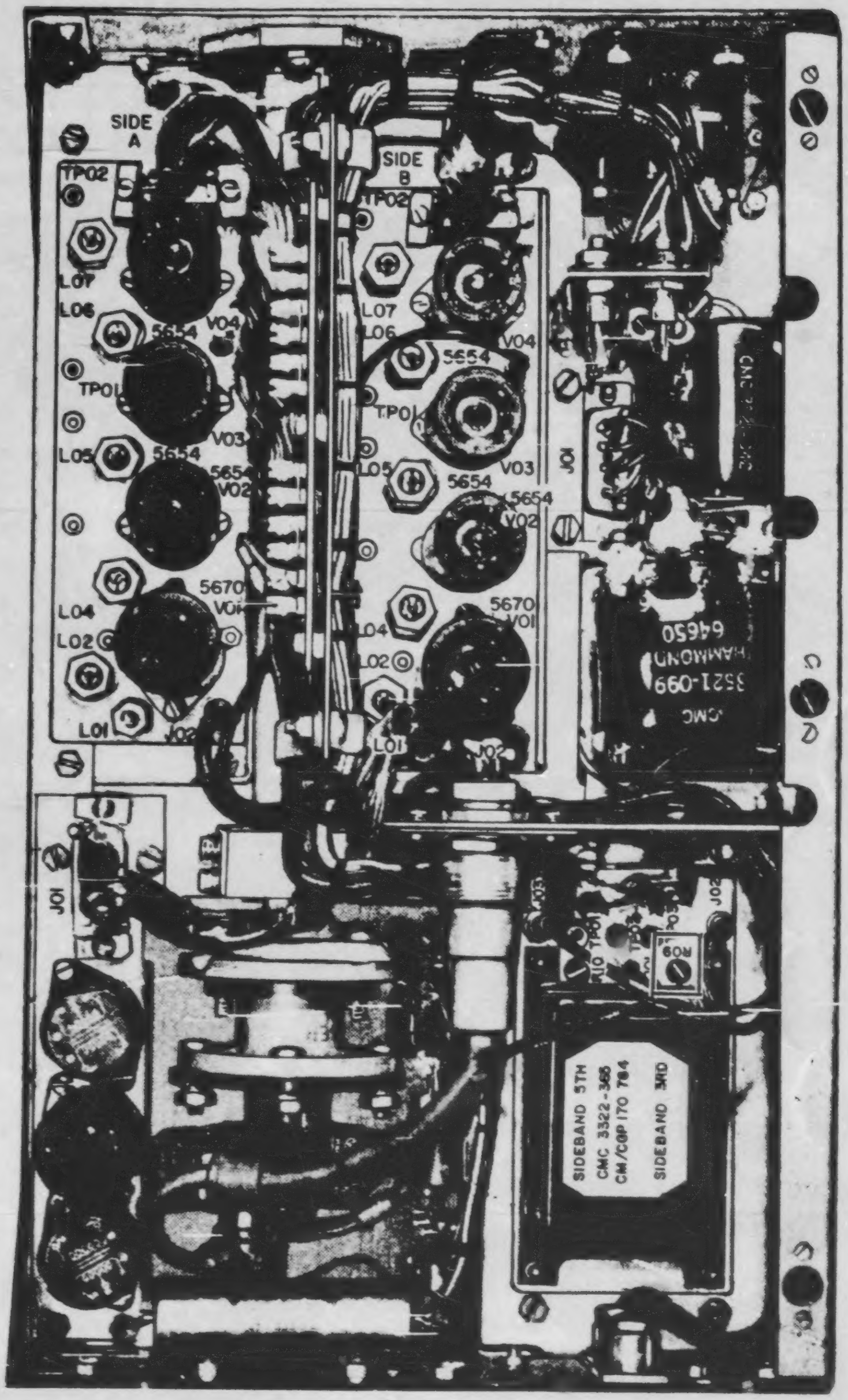
b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-8109. It is located on the Receiver/Transmitter as shown on opposite page. Note its position.

e. Rotate R-8109 eight 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.


SIDE A
SIDE B
TP02
L07
L06
5654
V04
TP01
V03
L05
5654
V02
5670
V01
L04
L02
L01
J02
J01
J01
CMC 3521-099
HAMMOND
64650
SIDEBAND 5TH
CMC 3322-365
CM/CGP 170 784
SIDEBAND 3RD
R09
TP01
TP03
J03
J02

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

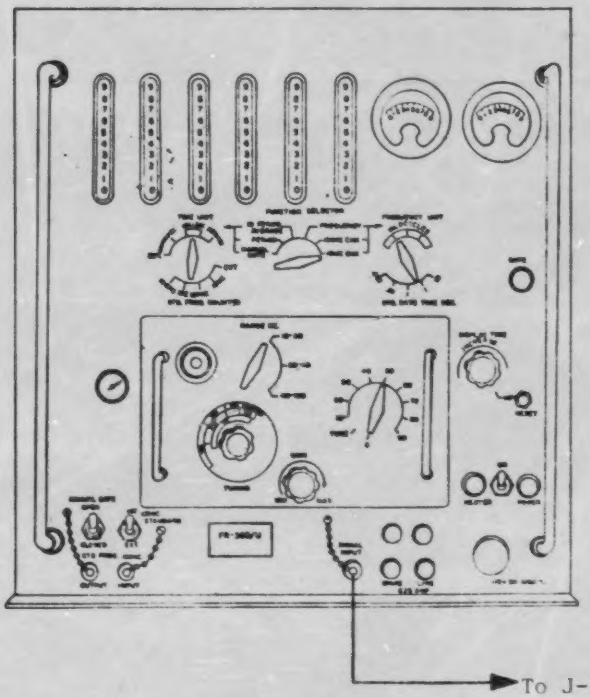
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the adjustment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

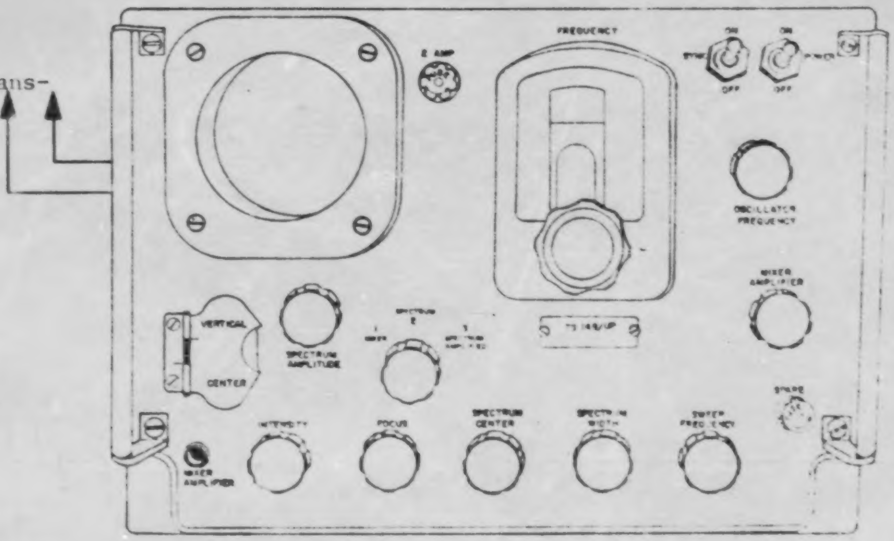
   1. ungrounded test or prime equipment
   2. uninsulated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this adjustment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)



To J-8101 on receiver/transmitter

To P-7701 on receiver/transmitter


FREQUENCY
Z AMP
ON
SYNC
OFF
ON
POWER
OFF
OSCILLATOR FREQUENCY
MIXER AMPLIFIER
VERTICAL
CENTER
SPECTRUM AMPLITUDE
TS-148/UP
SPARE
INTENSITY
FOCUS
SPECTRUM CENTER
SPECTRUM WIDTH
SWEEP FREQUENCY
MIXER AMPLIFIER

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the adjustment.

PERFORMANCE EVALUATION PROCEDURES

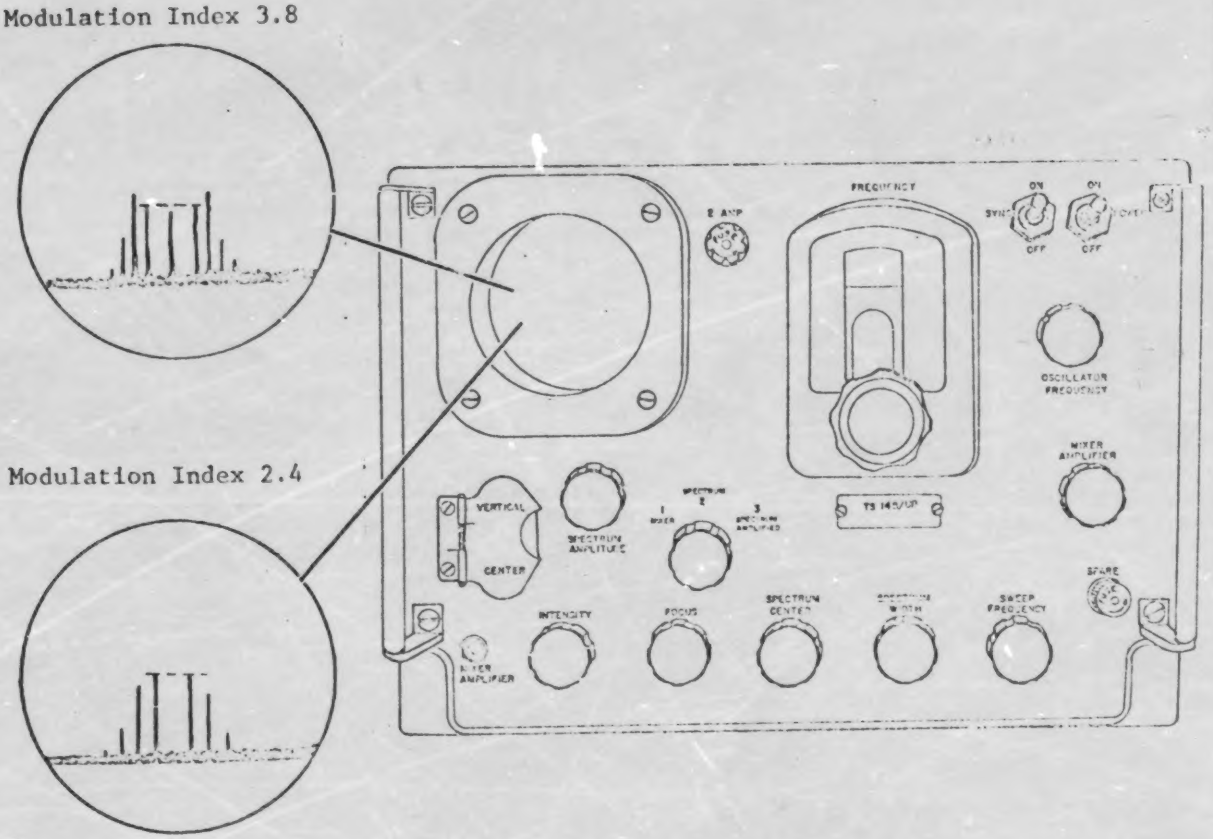
a. Have the technician demonstrate that the Modulator adjustment is within tolerance limits.

b. This is done as follows:

- Technician will show a Modulation Index of 3.8 and 2.4 on UPM-33 as shown on opposite page.

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


Modulation Index 3.8
Modulation Index 2.4
FREQUENCY
2 AMP
FUSE
ON
SYNC
OFF
ON
POWER
OFF
OSCILLATOR FREQUENCY
MIXER AMPLIFIER
VERTICAL
CENTER
SPECTRUM AMPLITUDE
SPECTRUM
1 MIXER
2
3 SPECTRUM AMPLIFIER
TS 148/UP
SPARE
INTENSITY
FOCUS
SPECTRUM CENTER
SPECTRUM WIDTH
SWEEP FREQUENCY
MIXER AMPLIFIER

AD-2

POST-TEST RECOVERY

a. If technician successfully accomplished the adjustment, recovery is completed.

b. If technician was unable to perform the adjustment, return R-8109 to its original position. Also R-8110 if mal-adjusted.

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

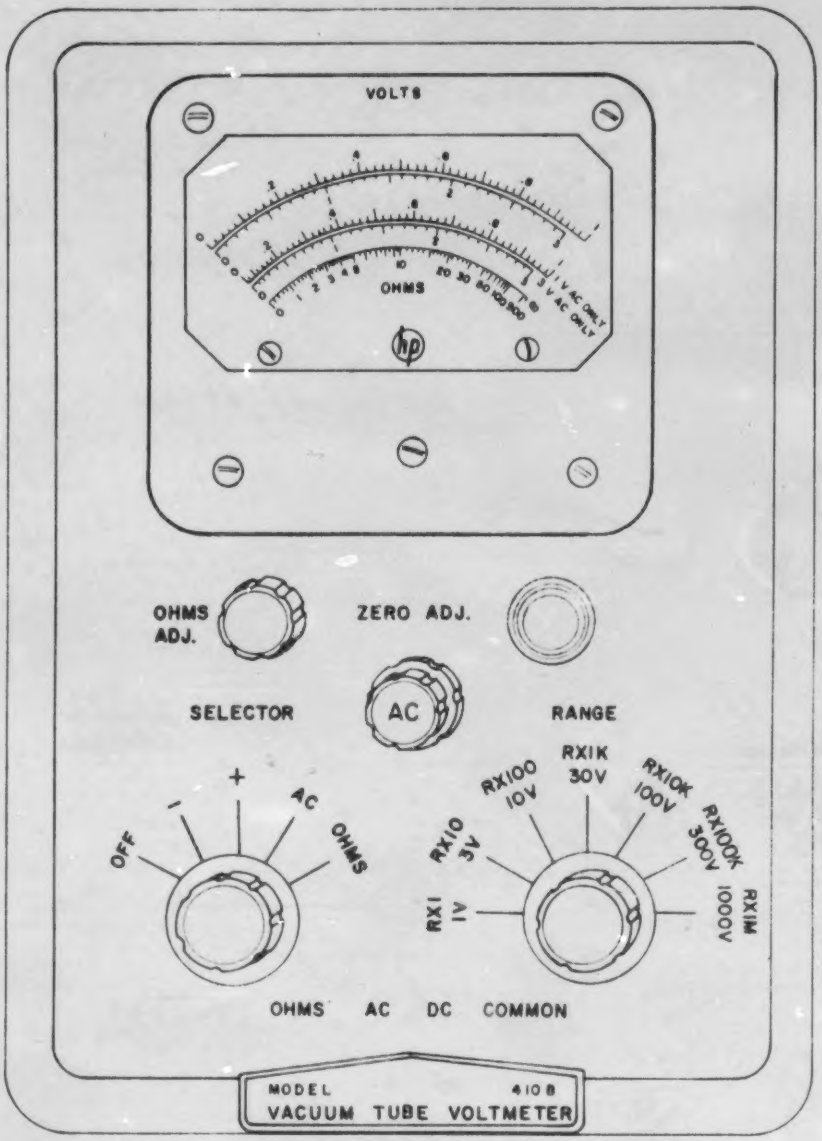
AD-3, Crystal Oscillator V-6701A Adjustment

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test set-up as described in Section A, Part IV
b. T.O. 12P5-2APN147-2 or Applicable Technical Data
c. Electronic Voltmeter (1), Model 410B or equivalent
d. Extension Cables
e. Insulated Alligator and Banana Plug Shorting Leads
f. Alignment Tool (Screw Driver Type)
g. Blade type Screw Driver


VOLTS
OHMS
1 V AC ONLY
3 V AC ONLY
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

(1)

AD-3

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

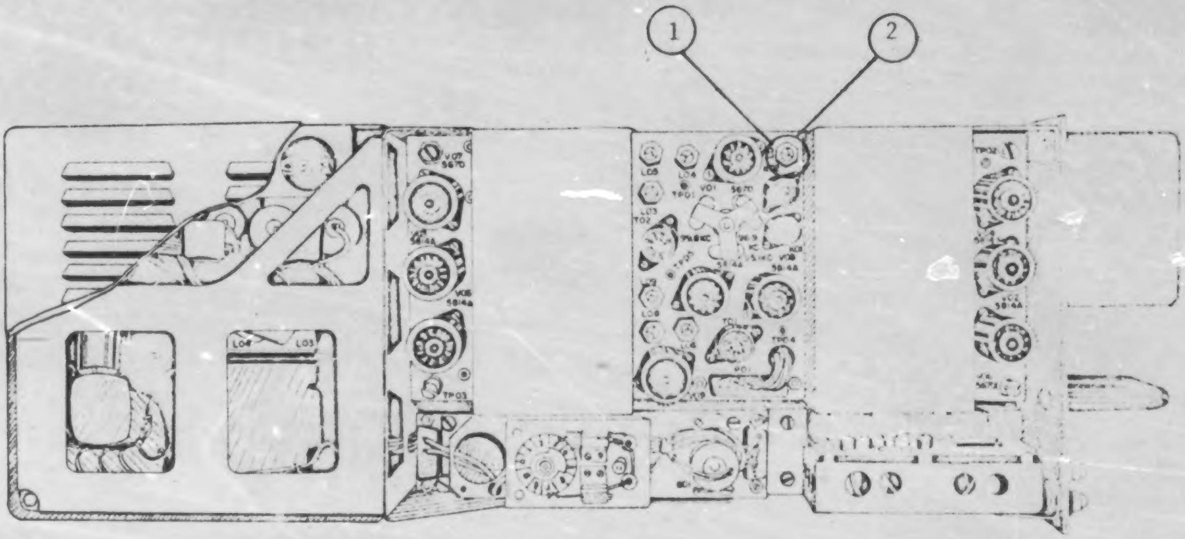
d. Locate L-6701. It is located on the Frequency Tracker as shown on opposite page. Note its position.

e. Loosen the lock-nut (1) that holds the slug of L-6701 in position.

f. Rotate L-6701 slug (2) six 360 degree turns counter-clockwise (CCW).

g. Tighten the lock-nut (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


1
2

AD-3

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

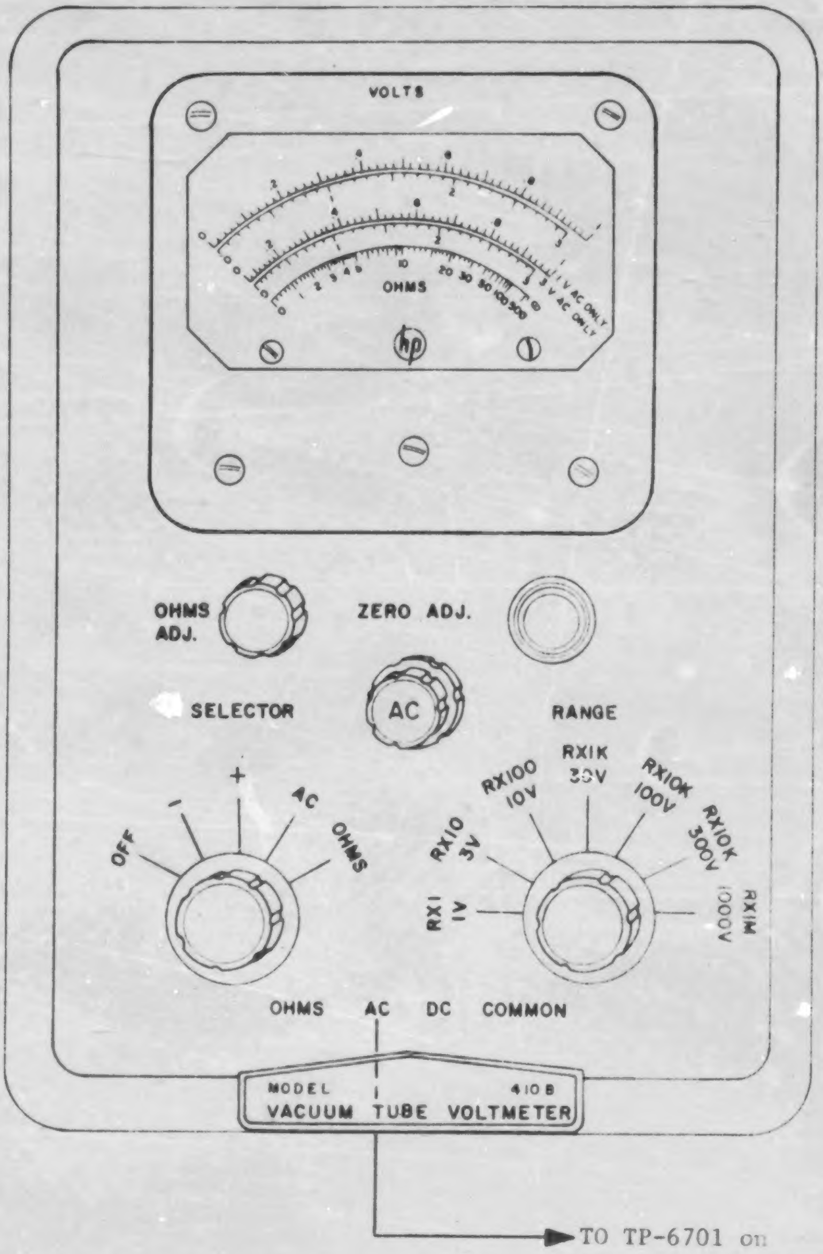
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the adjustment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this adjustment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


VOLTS
OHMS
1 V AC ONLY
3 V AC ONLY
hp
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX10K 300V
RX1M 1000V
OHMS
AC
DC
COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

TO TP-6701 on frequency tracker

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the adjustment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Crystal Oscillator V-6701A adjustment is within tolerance limits.

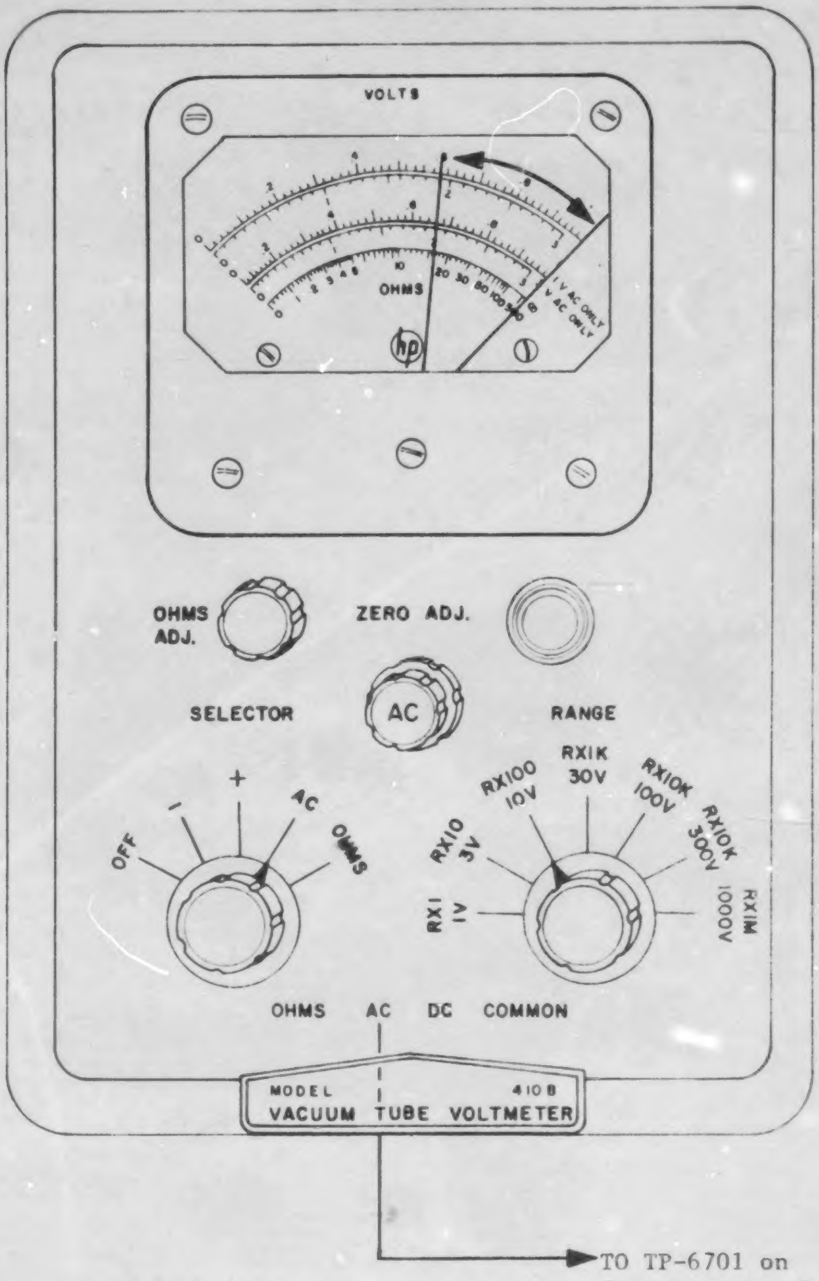
b. This is done as follows:

- With VTVM leads connected to TP-6701 and ground, meter will read between 6.5 and 10 VAC for 3 different groundspeeds.
- Technician will select 300 knots, then 500 and finally 800 knots. All VTVM readings will be in the range of 6.5 to 10 VAC (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.

AD-3


VOLTS
OHMS
hp
1 V AC ONLY
V AC ONLY
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX10K 300V
RX1M 1000V
OHMS
AC
DC
COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

TO TP-6701 on
frequency tracker

AD-3

POST TEST RECOVERY

a. Have the technician secure the set screws holding L-6701.

b. If technician successfully accomplished the adjustment, recovery is completed.

c. If technician was unable to perform the adjustment, return L-6701 to its original position using L-6701 template. (As shown on opposite page)

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

L-6701

TEST ADMINISTRATOR INSTRUCTIONS

TEST

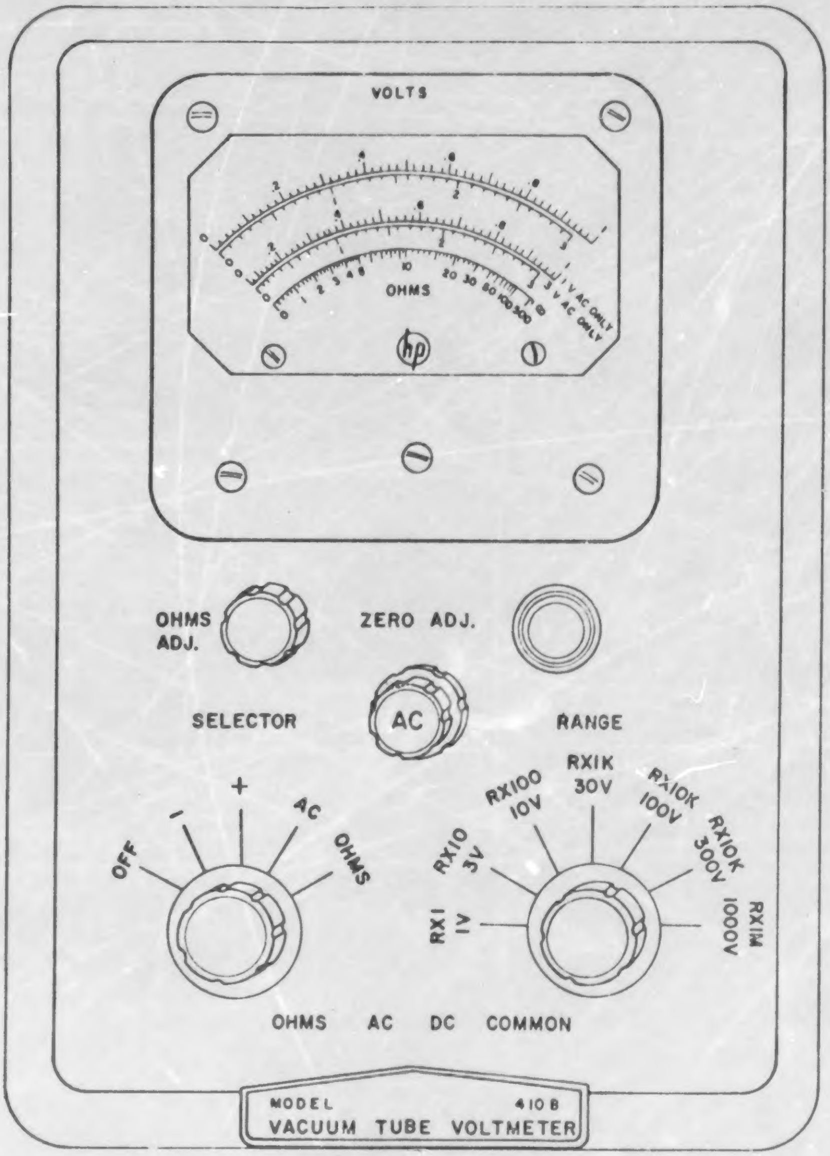
AD-4, Lock-Check Resistor R-6806 Adjustment

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test set-up as described in Section A, Part IV
b. T.O. 12P5-2APN147-2 or Applicable Technical Data
c. Coaxial Cables and Adaptors
d. Insulated Alligator and Banana Plug Shorting Leads
e. Electronic Voltmeter, Model 410B or equivalent (1)
f. Extension Cables
g. Insulated Screw driver


VOLTS
1 V AC ONLY
3 V AC ONLY
OHMS
hp
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX10K 300V
RX1M 1000V
OHMS
AC
DC
COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

(1)

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

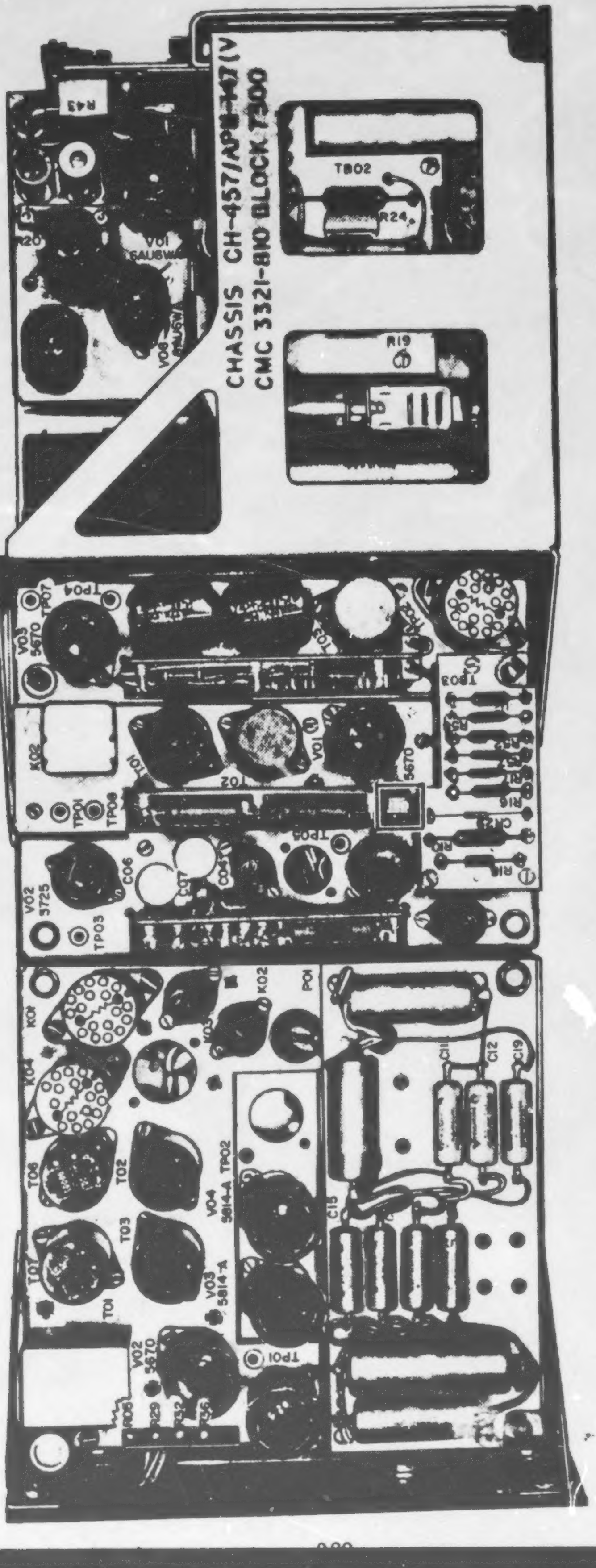
b. If the set is not functioning properly request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-6806. It is located on the Signal Comparator, as shown on opposite page. Note its position.

e. Rotate R-6806 ten 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.


CHASSIS CH-457/APN-147(V)
CMC 3321-810 BLOCK 7300
R43
TB02
R24
R20
V01 6AU6WA
V08 6AU6W
R19
TP04
TP07
V03 5670
K02
TP01
TP08
T01
T02
V01 5670
TB03
R16
CR1
TP05
C06
C07
C04
V02 5725
TP03
K01
K04
K02
P01
T03
T06
TP02
V04 5814-A
V03 5814-A
V02 5670
TP01
C11
C12
C19
C15

AD-4

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

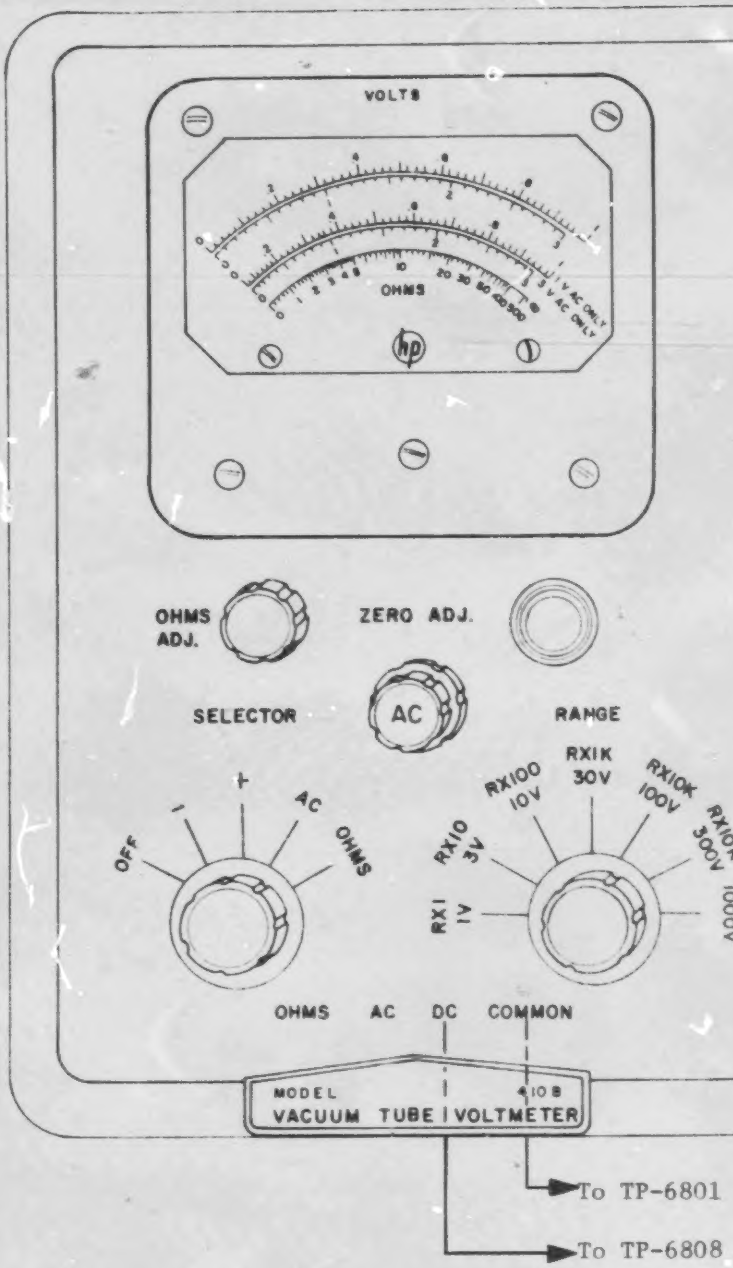
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the adjustment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this adjustment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


VOLTS
OHMS
1 V AC ONLY
3 V AC ONLY
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
−
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX10K 300V
RX1M 1000V
OHMS
AC
DC
COMMON
MODEL 410B
VACUUM TUBE VOLTMETER
To TP-6801
To TP-6808

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

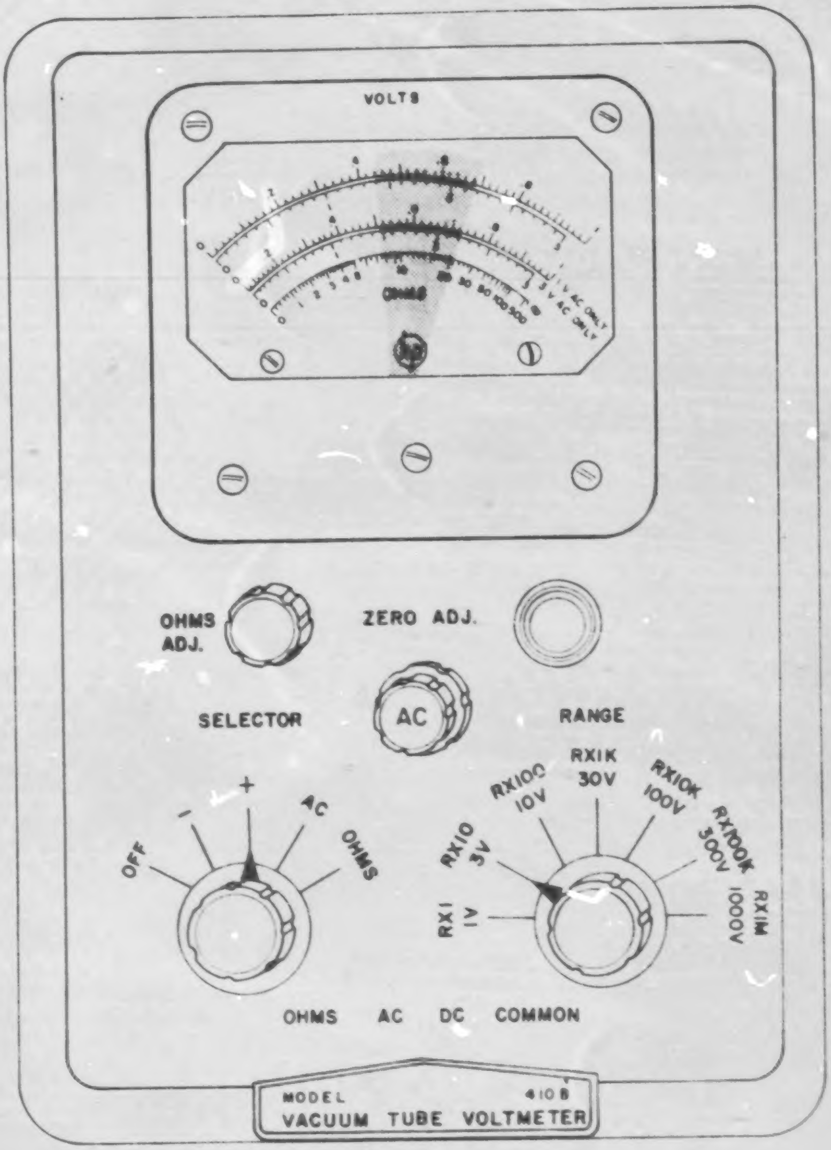
g. Stop the test when time has elapsed or the technician indicates that he has completed the adjustment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Lock-Check Resistor adjustment is within tolerance limits.

b. This is done as follows:

VTVM reading will be between 1.4 and 2.2 V.D.C.
(See opposite page.)


VOLTS
1 V AC ONLY
3 V AC ONLY
OHMS
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

AD-4

POST-TEST RECOVERY

a. If technician successfully accomplished the adjustment, recovery is completed.

b. If technician was unable to perform the adjustment, return R-6806 to its original position. (Thirteen 360 degree turns CW from fully CCW position will adjust to acceptable standard. Click denotes fully CCW - can be heard and felt.)

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

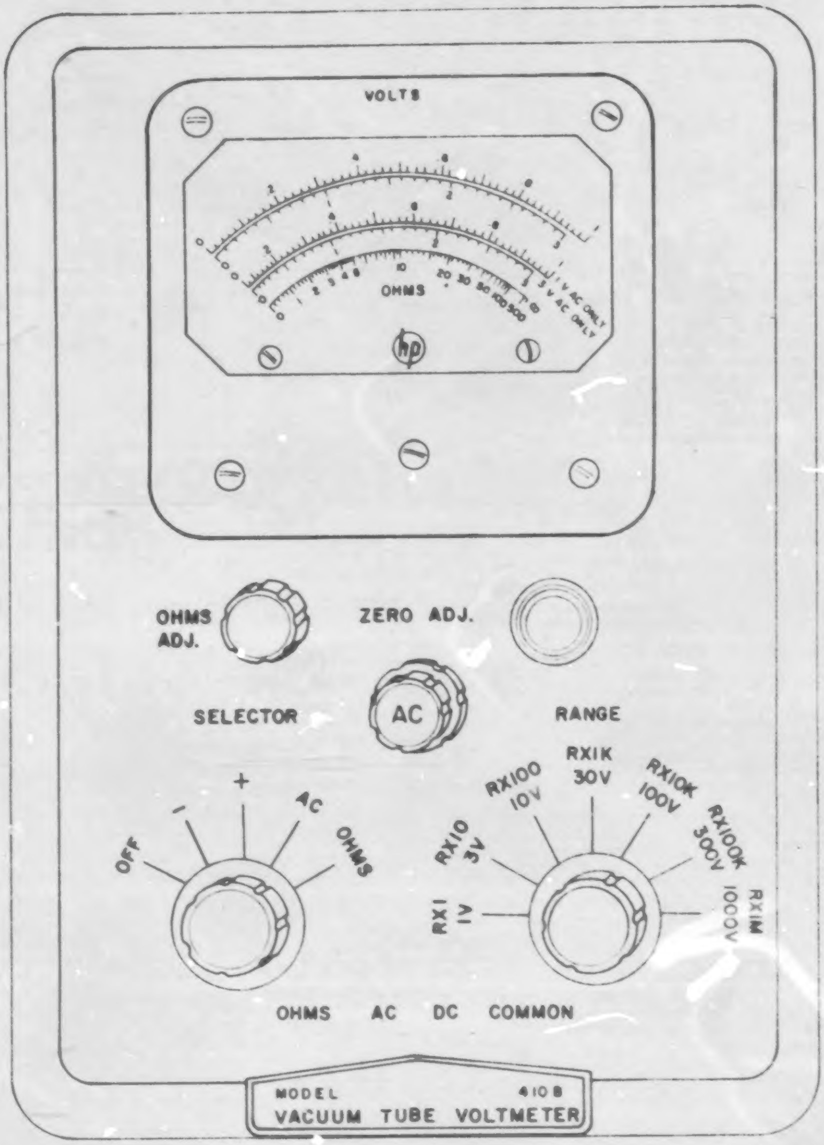
AD-5, Power Supply Adjustments

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test set-up as described in Section A, Part IV
b. T.O. 12P5-2APN147-2 or Applicable Technical Data
c. Electronic Voltmeter (1), Model 410B or equivalent
d. Insulated Screw Driver


VOLTS
OHMS
1 V AC ONLY
3 V AC ONLY
hp
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

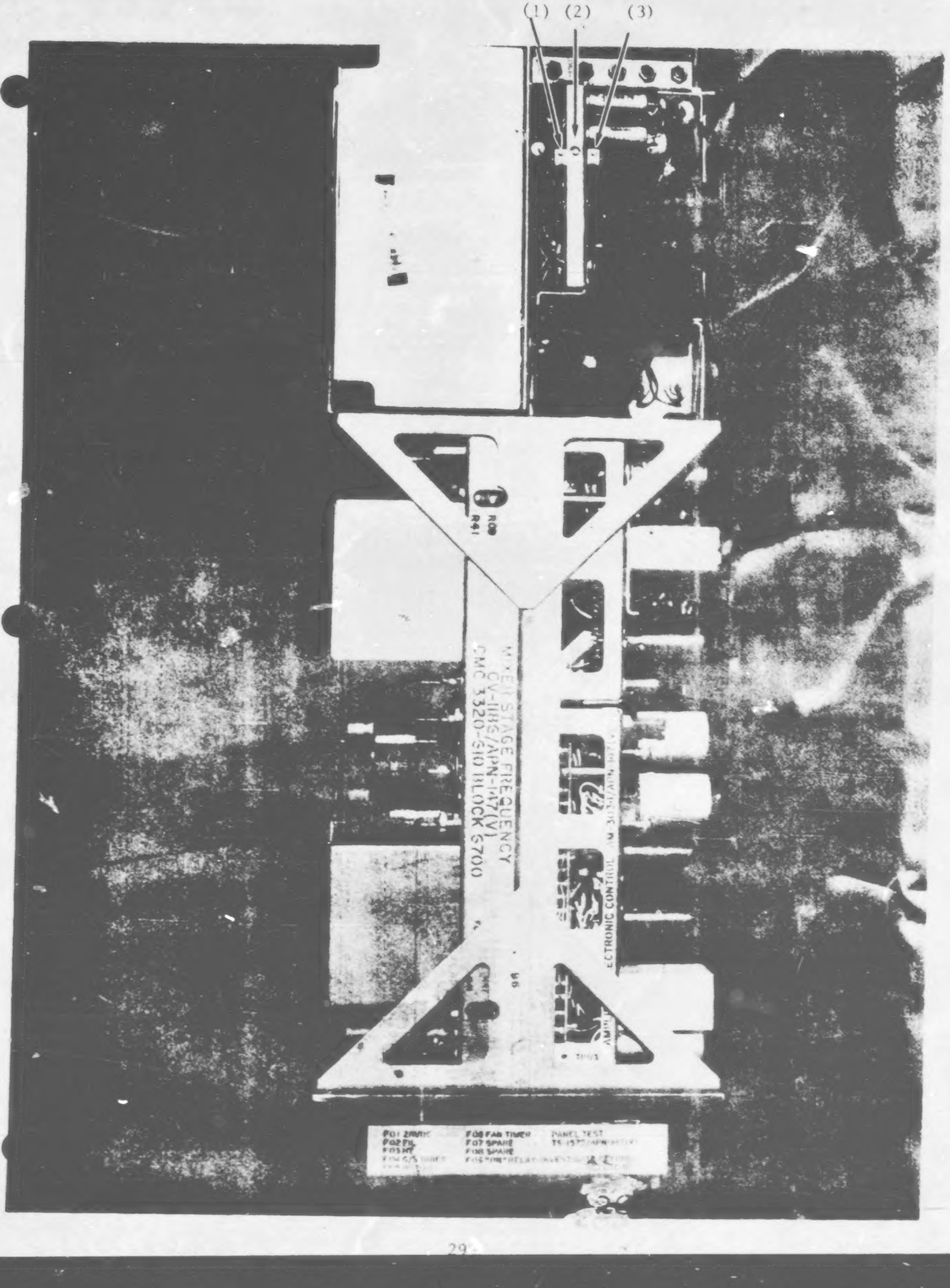
b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-7220 (1), R-7233 (2) and R-7248 (3). It is located on the Frequency Tracker, as shown on opposite page. Note their position.

e. Rotate R-7220, R-7233 and R-7248 eight 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.


(1)
(2)
(3)
MIXER STAGE FREQUENCY
CV-1185/APN-147(V)
CMC 3320-S10 BLOCK S700
R41
ELECTRONIC CONTROL

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

b. Note the time and have the technician begin the test.

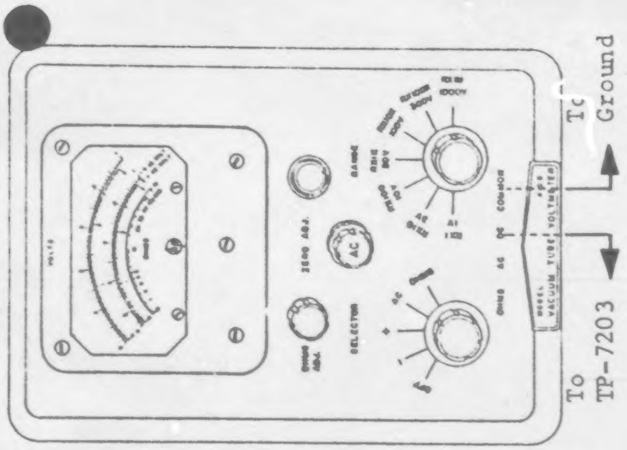
c. When the technician completes his bench set-up for performing the adjustment, he will ask you to check it.

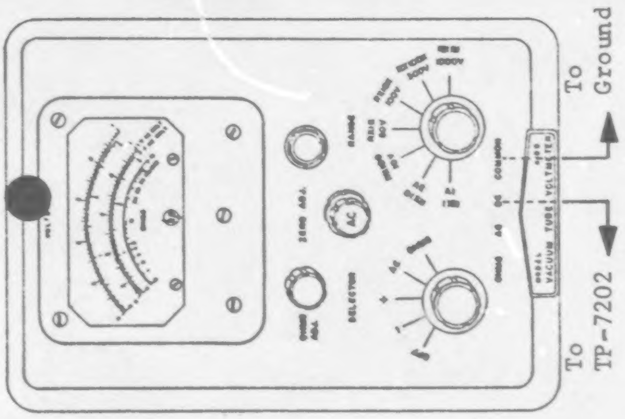
d. Check the technician's bench set-up for safety hazards such as:

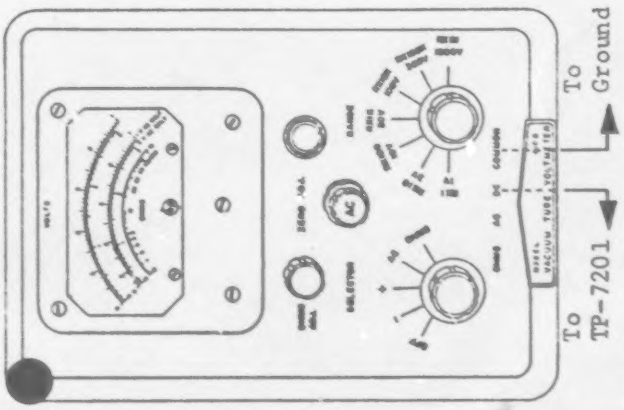
1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this adjustment.)

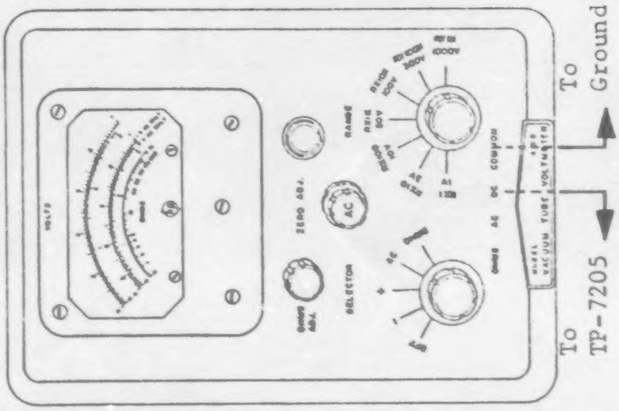
e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)

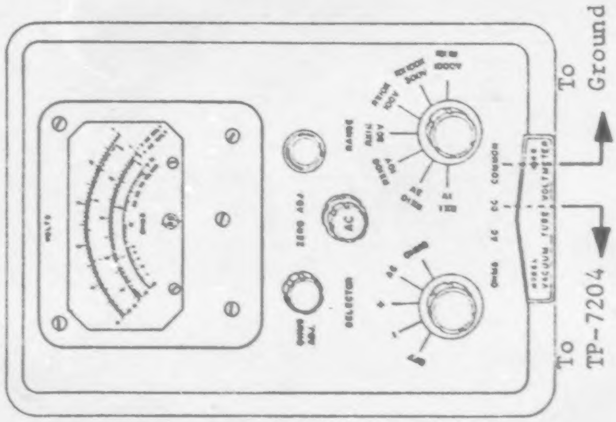
AD-5


VOLTS
OHMS ADJ.
SELECTOR
ZERO ADJ.
AC
RANGE
OHMS
AC
DC
COMMON
VACUUM TUBE VOLTMETER
To Ground
To TP-7203


VOLTS
OHMS ADJ.
SELECTOR
ZERO ADJ.
AC
RANGE
OHMS
AC
DC
COMMON
VACUUM TUBE VOLTMETER
To Ground
To TP-7202


VOLTS
OHMS ADJ.
SELECTOR
ZERO ADJ.
AC
RANGE
OHMS
AC
DC
COMMON
VACUUM TUBE VOLTMETER
To Ground
To TP-7201


VOLTS
OHMS ADJ.
SELECTOR
ZERO ADJ.
AC
RANGE
OHMS
AC
DC
COMMON
VACUUM TUBE VOLTMETER
To Ground
To TP-7205


VOLTS
OHMS ADJ.
SELECTOR
ZERO ADJ.
AC
RANGE
OHMS
AC
DC
COMMON
VACUUM TUBE VOLTMETER
To Ground
To TP-7204

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the adjustment.

PERFORMANCE EVALUATION PROCEDURES

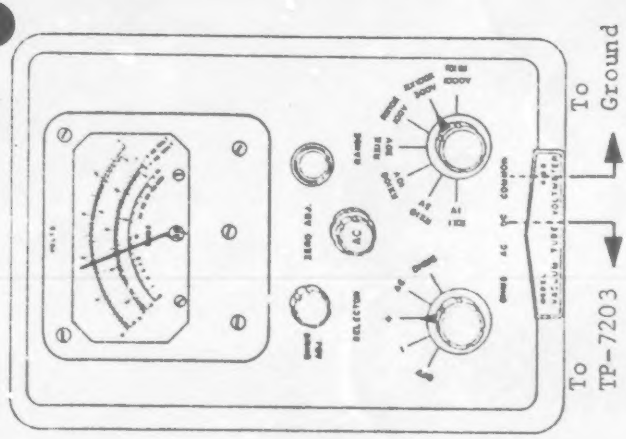
a. Have the technician demonstrate that the Power Supply adjustments are within tolerance limits.

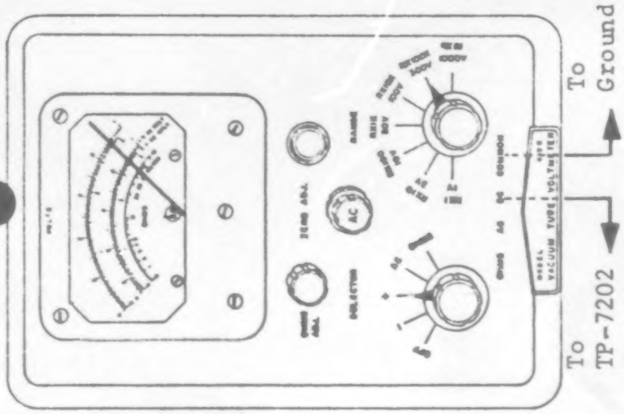
b. This is done as follows:

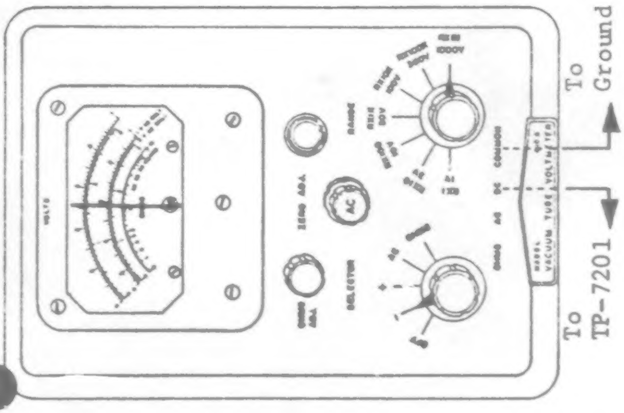
The technician will show voltage readings at

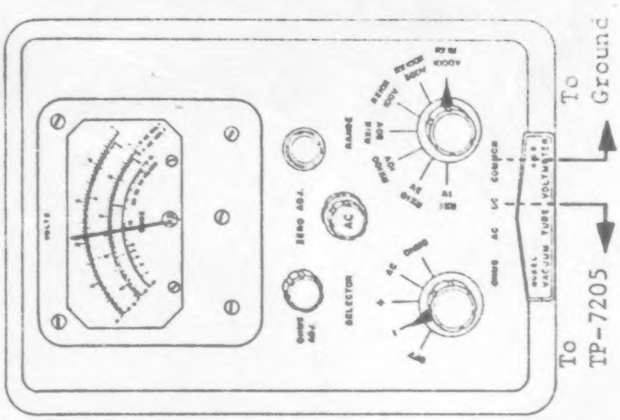
TP-7201 = 500 VDC ± 1%
TP-7202 = +280 VDC ± 1%
TP-7203 = +108 to 132 VDC
TP-7204 = -135 to -165 VDC
TP-7205 = -425 VDC ± 1%

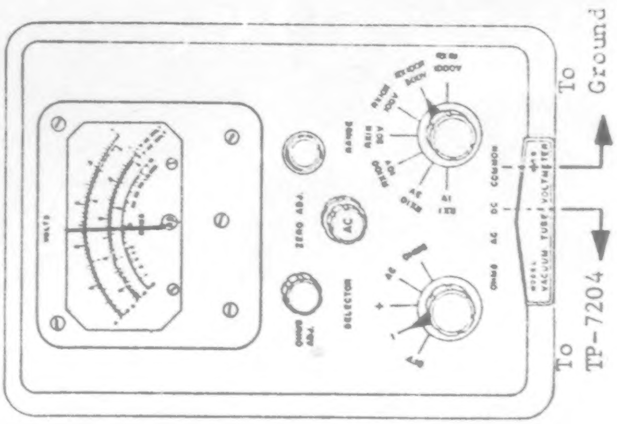
See opposite page.


VOLTS
ZERO ADJ.
AC
OHMS ADJ.
SELECTOR
RANGE
COMMON
DC
AC
OHMS
VACUUM TUBE VOLTMETER
To TP-7203
To Ground


VOLTS
ZERO ADJ.
AC
OHMS ADJ.
SELECTOR
RANGE
COMMON
DC
AC
OHMS
VACUUM TUBE VOLTMETER
To TP-7202
To Ground


VOLTS
ZERO ADJ.
AC
OHMS ADJ.
SELECTOR
RANGE
COMMON
DC
AC
OHMS
VACUUM TUBE VOLTMETER
To TP-7201
To Ground


VOLTS
ZERO ADJ.
AC
OHMS ADJ.
SELECTOR
RANGE
COMMON
DC
AC
OHMS
VACUUM TUBE VOLTMETER
To TP-7205
To Ground


VOLTS
ZERO ADJ.
AC
OHMS ADJ.
SELECTOR
RANGE
COMMON
DC
AC
OHMS
VACUUM TUBE VOLTMETER
To TP-7204
To Ground

PERFORMANCE EVALUATION PROCEDURES (Con't)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheet and complete question II.

POST-TEST RECOVERY

a. If technician successfully accomplished the adjustment, recovery is completed.

b. If technician was unable to perform the adjustment, return R-7220, R-7233 and R-7248 to their original position.

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

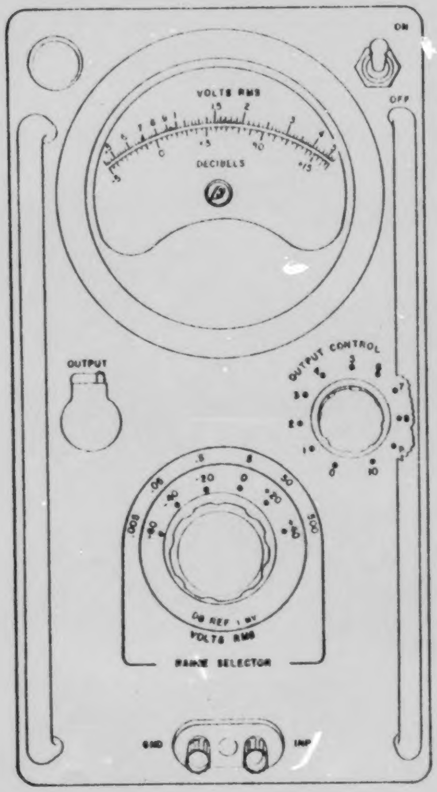
AD-6, Sine-Cosine Potentiometer R-301 Adjustment

TIME ALLOTTED

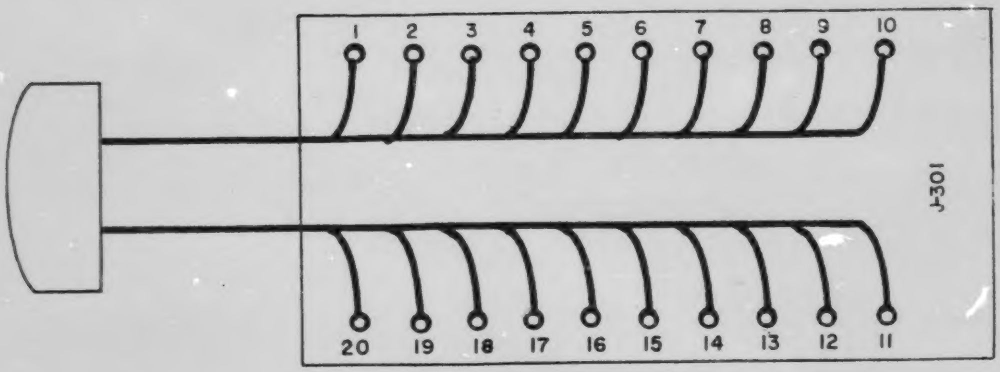
30 minutes

SUPPORT MATERIALS REQUIRED

a. Computer Bench Test set-up as described in Section A, Part VII
b. T.O. 5N1-3-8-2 or Applicable Technical Data
c. Electronic Voltmeter (1), ME-26 or equivalent
d. J-301 Test Jig (2)
e. Blade type Screw Driver
f. Insulated Screw Driver


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND
INP

(1)


J031

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

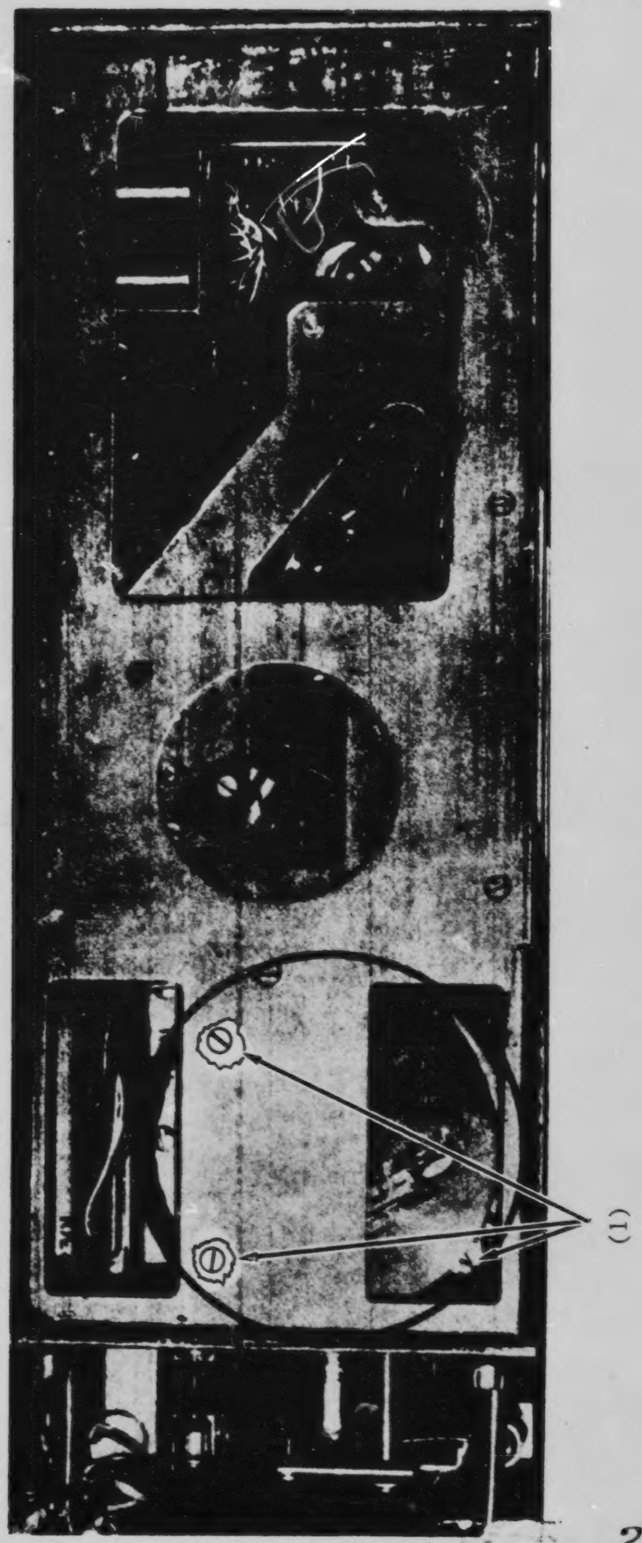
d. Locate R-301. It is located on the computer, as shown on opposite page. Note its position.

e. Loosen the three set screws (1) that hold R-301 in position.

f. Rotate R-301 ten degrees (45^{o}) counter-clockwise (CCW).

g. Tighten the three set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


(1)

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

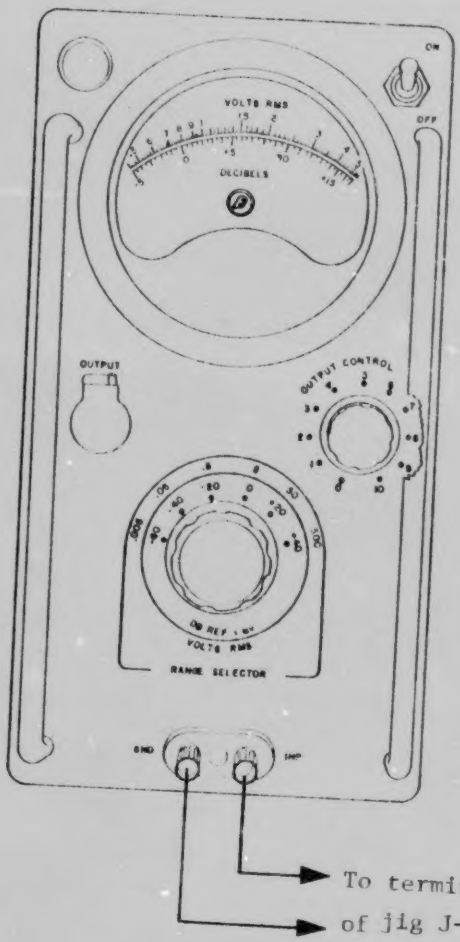
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the adjustment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

   1. ungrounded test or prime equipment
   2. uninsulated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this adjustment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND

To terminals 12 & 14
of jig J-301

AD-6

POST-TEST RECOVERY

a. Have the technician secure the set screws holding R-301.

b. If technician successfully accomplished the adjustment, recovery is completed.

c. If technician was unable to perform the adjustment, return R-301 to its original position.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the adjustment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Sine-Cosine Potentiometer R-301 adjustment is within tolerance limits.

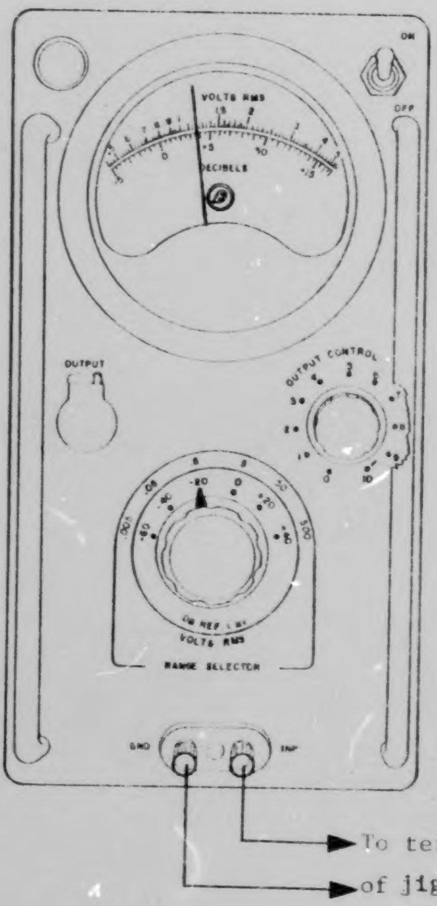
b. This is done as follows:

- With VTVM leads connected pins 12 & 14 of J-301 test jig and main cam at zero, technician rotates R-301 slightly CW and then CCW.

- VTVM needle will rise when R-301 is turned in either direction, if it has been properly adjusted. About 0.05 to 0.25 VAC.(See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheet and complete question II.


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MW
VOLTS RMS
RANGE SELECTOR
GND
INP

To terminals 12 & 14
of jig J-301

TEST ADMINISTRATOR INSTRUCTIONS

TEST

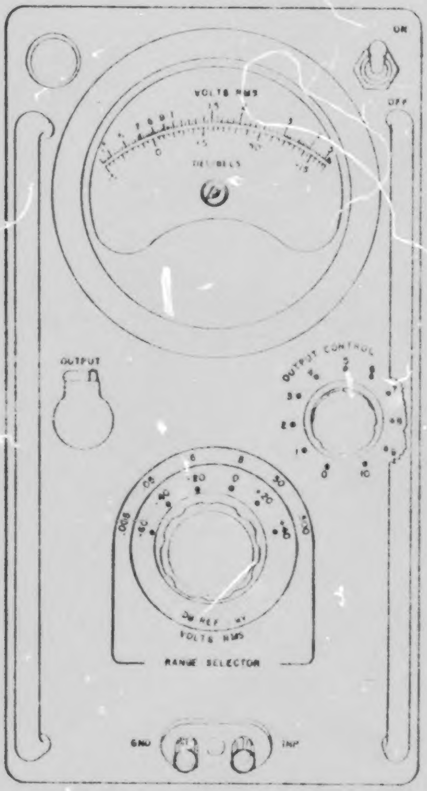
AL-1, Antenna Synchro Alignment

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test set-up as described in Section A, Part IV
b. T.O 12P5-2APN147-2 or Applicable Technical Data
c. Electronic Voltmeter (1) ME-26 or equivalent
d. Doppler Antenna Alignment Jig (2) CMA-548
e. Blade-type Screw Driver


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
RANGE SELECTOR
DB REF 1V
VOLTS RMS
GND
INP

(1)

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

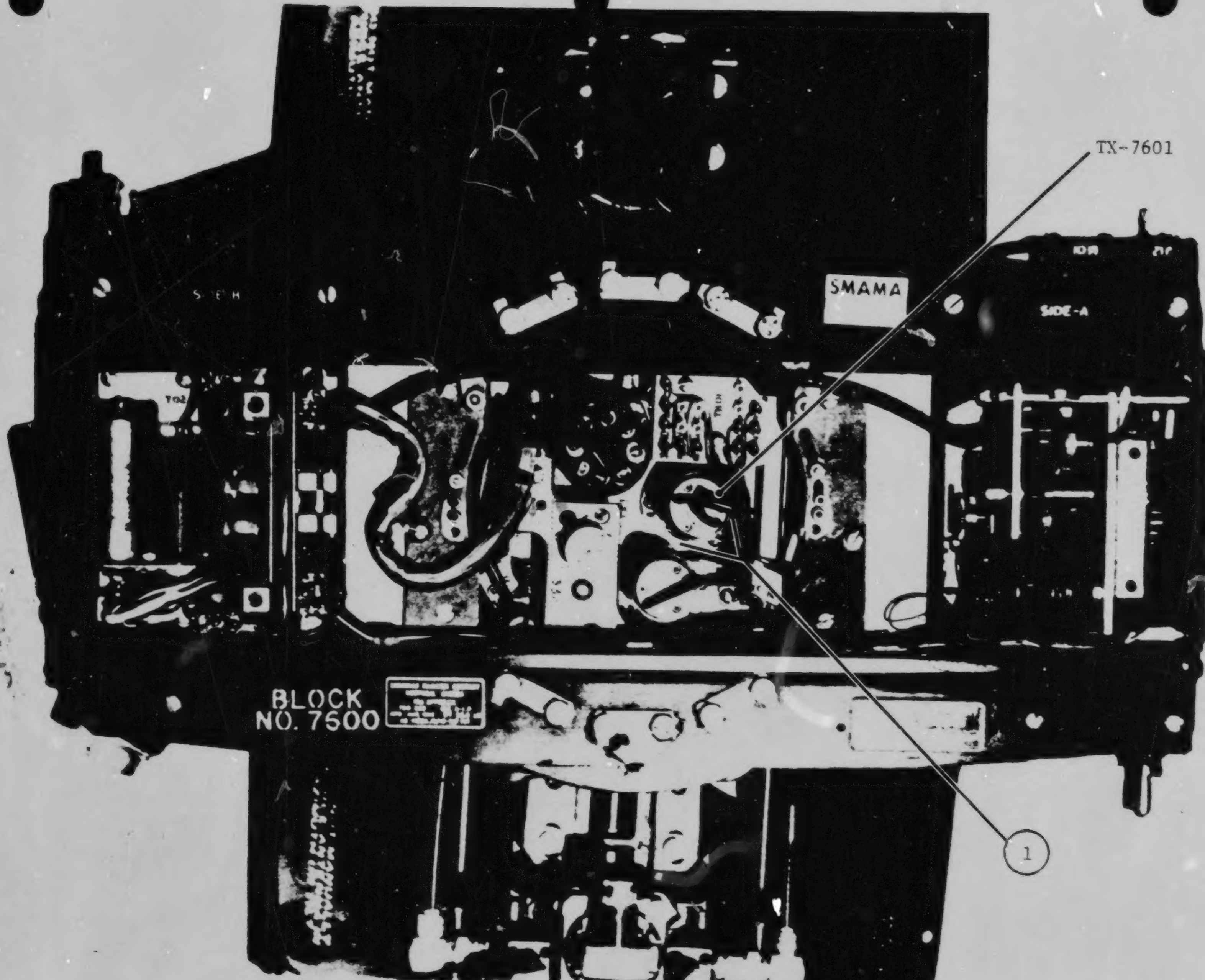
d. Locate TX-6701. It is located on the antenna, as shown on the opposite page. Note its position.

e. Loosen the two set screws (1) that hold TX-7601 in position.

f. Rotate TX-7601 forty-five degrees (45°) counter-clockwise (CCW).

g. Tighten the two set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


TX-7601
1
SMAMA
SIDE-A
BLOCK
NO. 7500

AL-1

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

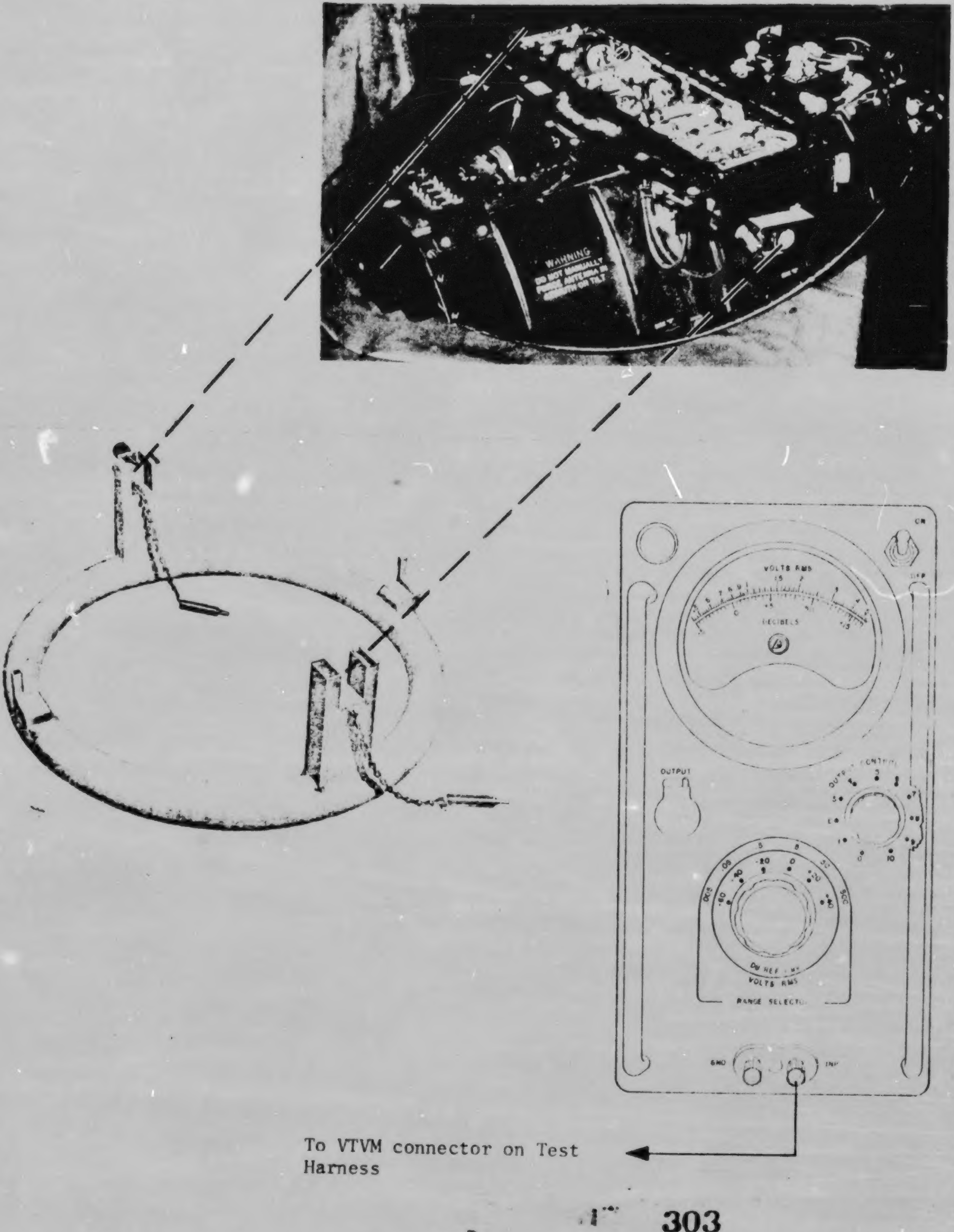
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


WARNING
DO NOT MANUALLY FORCE ANTENNA IN AZIMUTH OR TILT
ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
INP

To VTVM connector on Test Harness

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

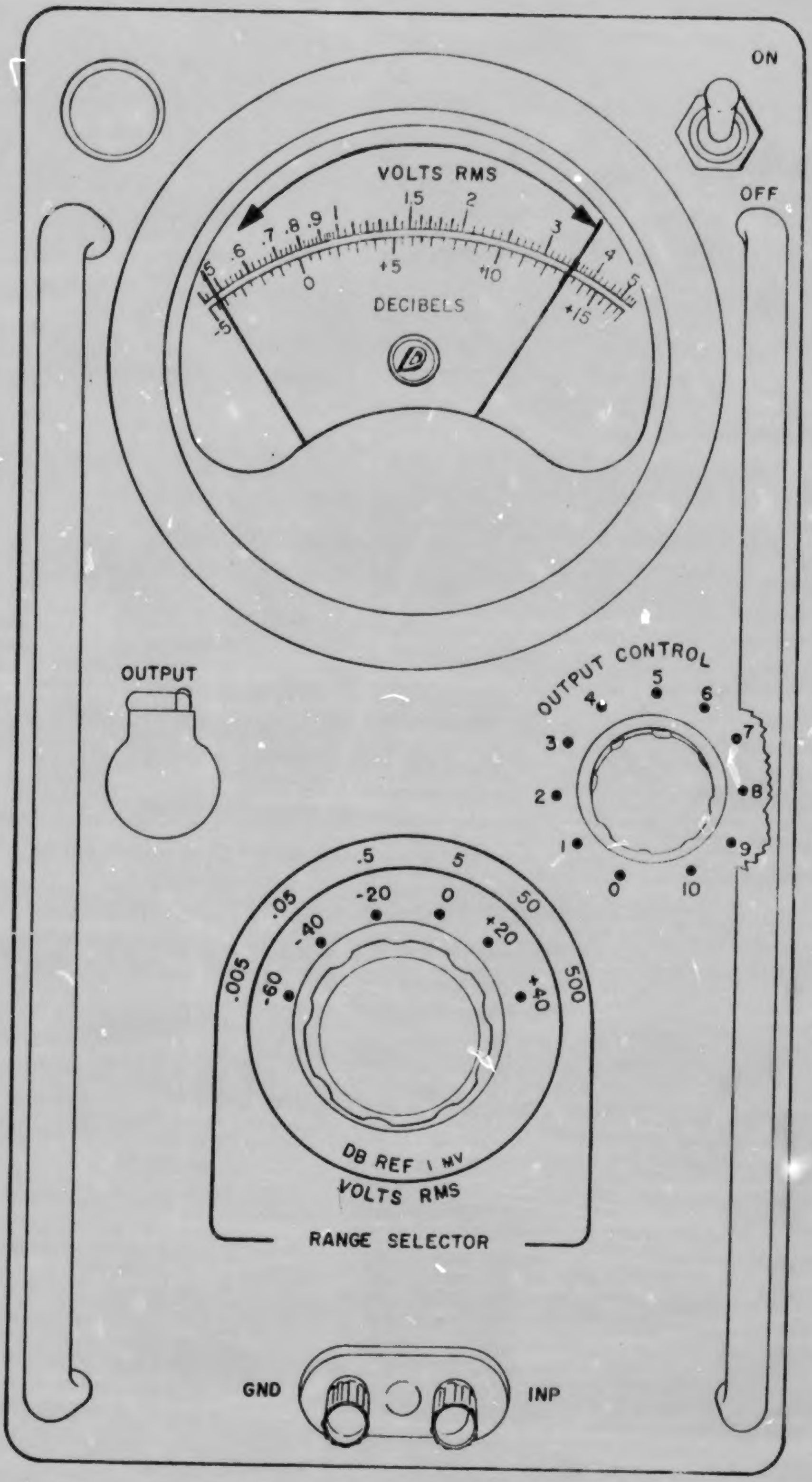
a. Have the technician demonstrate that the Antenna Synchro alignment is within tolerance limits.

b. This is done as follows:

- With VTVM leads connected, technician rotates TX-7601 slightly CW and then CCW.
- VTVM needle will rise when TX-7601 is turned in either direction, if it has been properly aligned. See opposite page.

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


ON
OFF
VOLTS RMS
.5 .6 .7 .8 .9 1 1.5 2 3 4 5
-5 0 +5 10 +15
DECIBELS
OUTPUT
OUTPUT CONTROL
0 1 2 3 4 5 6 7 8 9 10
.005 .05 .5 5 50 500
-60 -40 -20 0 +20 +40
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND
INP

POST-TEST RECOVERY

a. Have the technician secure the set screws holding TX-7601.

b. If technician successfully accomplished the alighment, recovery is completed.

c. If technician was unable to perform the alignment, return TX-7601 to its original position.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

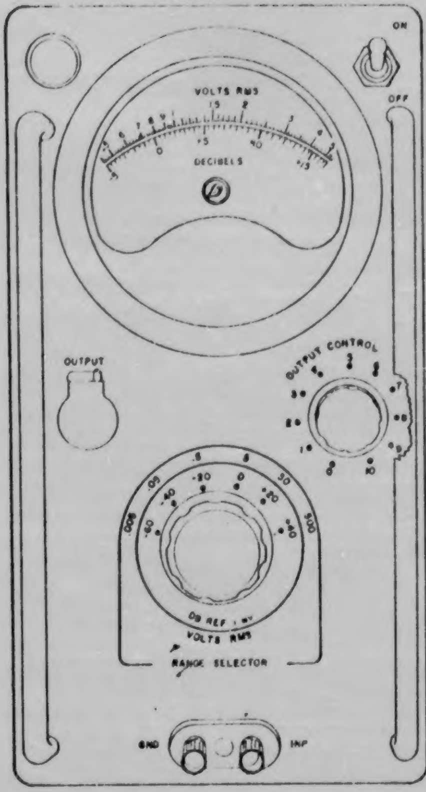
AL-2, 200-KC Bandpass Filter Alignment

TIME ALLOTTED

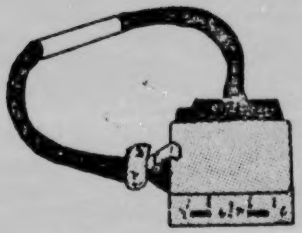
45 minutes

SUPPORT MATERIALS REQUIRED

a. Bench Test Set-up as described in Section A, Part IV.
b. T.O. 12P5-2APN147-2 or Applicable Technical Data.
c. Insulated Alligator and Banana Plug Shorting Leads.
d. Electronic Voltmeter (1), ME-26 or equivalent.
e. Extension Cables (2).
f. Alignment Tool (Screw driver Type).


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND
INP

(1)



(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

b. If the set is not functioning properly, request one that is or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

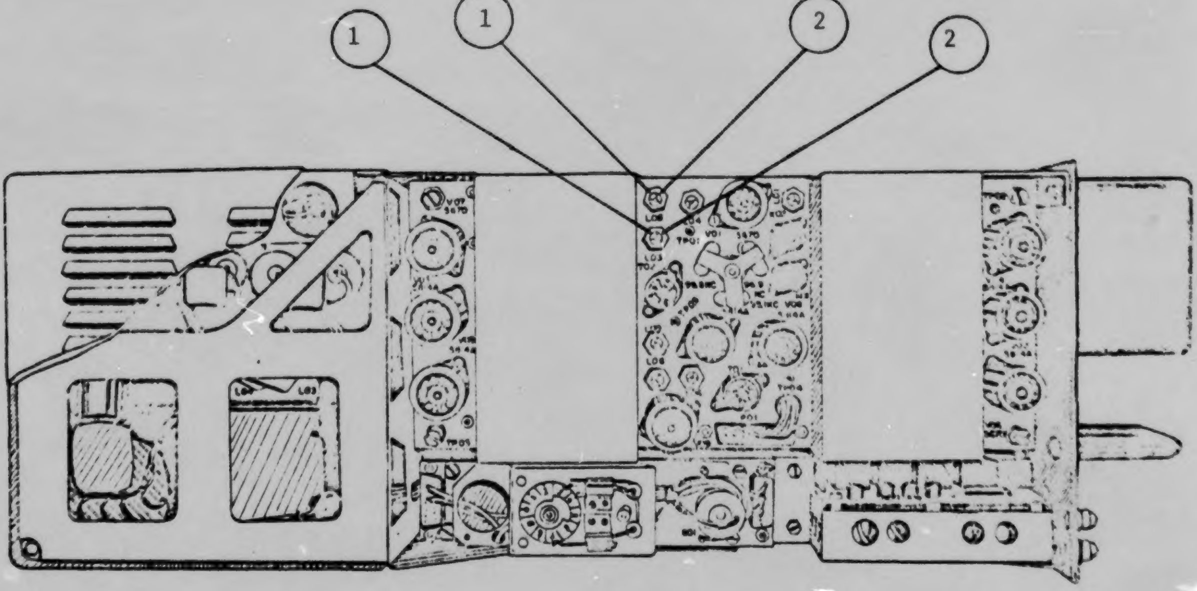
d. Locate L-6703 and L-6705 located on the frequency mixer stage as shown on the opposite page. Note its position.

e. Loosen the lock-nuts (1) that hold the slugs (2) of L-6703 and L-6705 in position.

f. Rotate L-6703 and L-6705 slugs (2) six 360° turns counter-clockwise (CCW).

g. Tighten the two lock-nuts (1).

h. Review the technician's Test Instructions to familiarize yourself with them.



TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

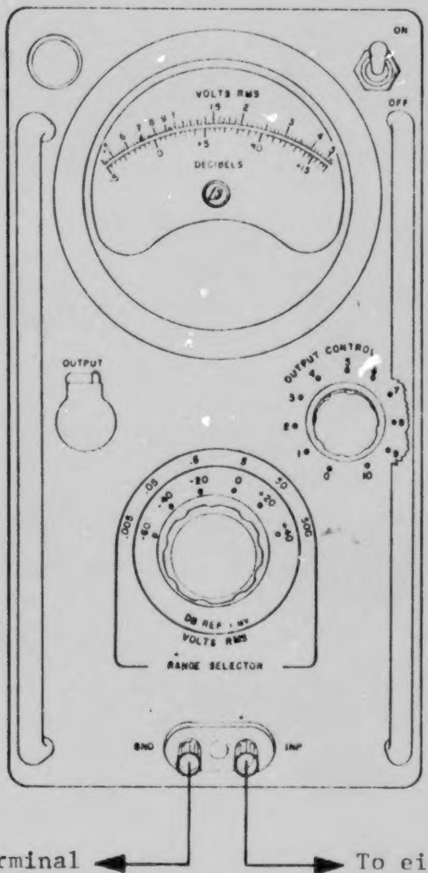
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

   1. ungrounded test or prime equipment
   2. uninsulated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND
INP

To either terminal
3 or 4 of L-6705

To either terminal
3 or 4 of L-6705

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the 200-KC Bandpass Filter alignment is within tolerance limits.

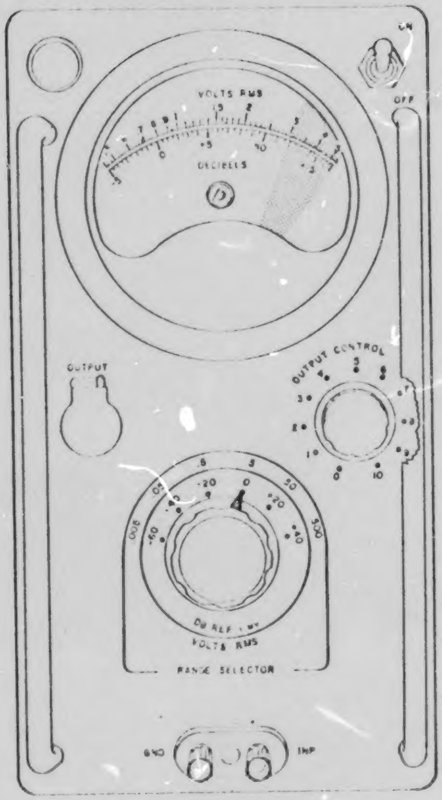
b. This is done as follows:

   - With VTVM leads connected, across terminals 3 and 4 of L-6705, technician selects groundspeeds of 300,500 and 800 knots.

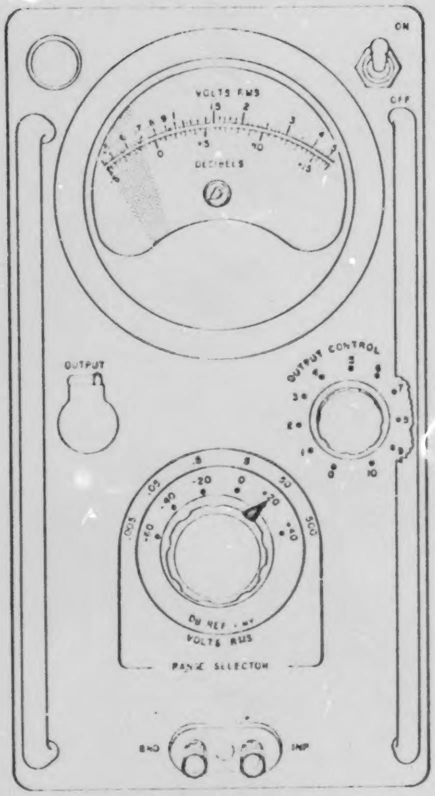
   - VTUM will read between 3.0 and 5.5 VAC for a groundspeed of 300 and 800 knots - between 4.5 and 7.0 VAC for a groundspeed of 500 knots. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MW
VOLTS RMS
RANGE SELECTOR
GND
INP

VAC reading for groundspeeds of 300 & 800 knots


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MW
VOLTS RMS
RANGE SELECTOR
GND
INP

VAC reading for groundspeed of 500 knots

POST-TEST RECOVERY

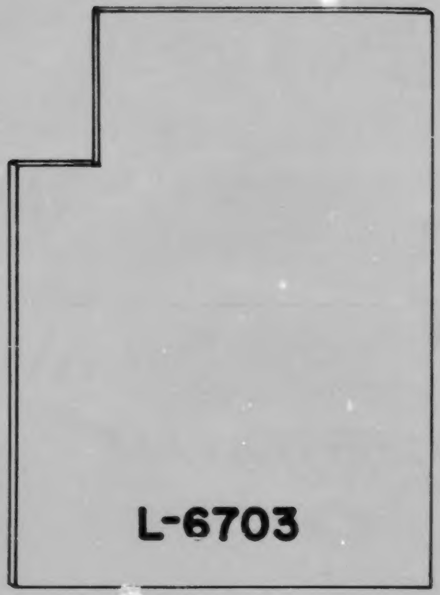
a. Have the technician secure the lock-nuts holding the slugs of L-6703 and L-6705 of VTVM if readings were correct.

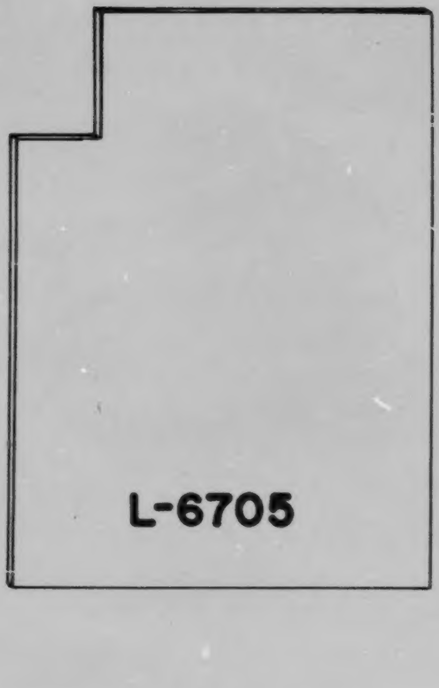
b. If technician successfully accomplished the alignment recovery is completed.

c. If technician was unable to perform the alignment, return L-6703 and L-6705 to original position. Use L-6703 and L-6705 template to adjust set as shown on opposite page.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.


L-6703


L-6705

TEST ADMINISTRATOR INSTRUCTIONS

TEST

AL-3, Groundspeed and Drift Circuits Alignment

TIME ALLOTTED

30 minutes

SUPPORT REQUIRED

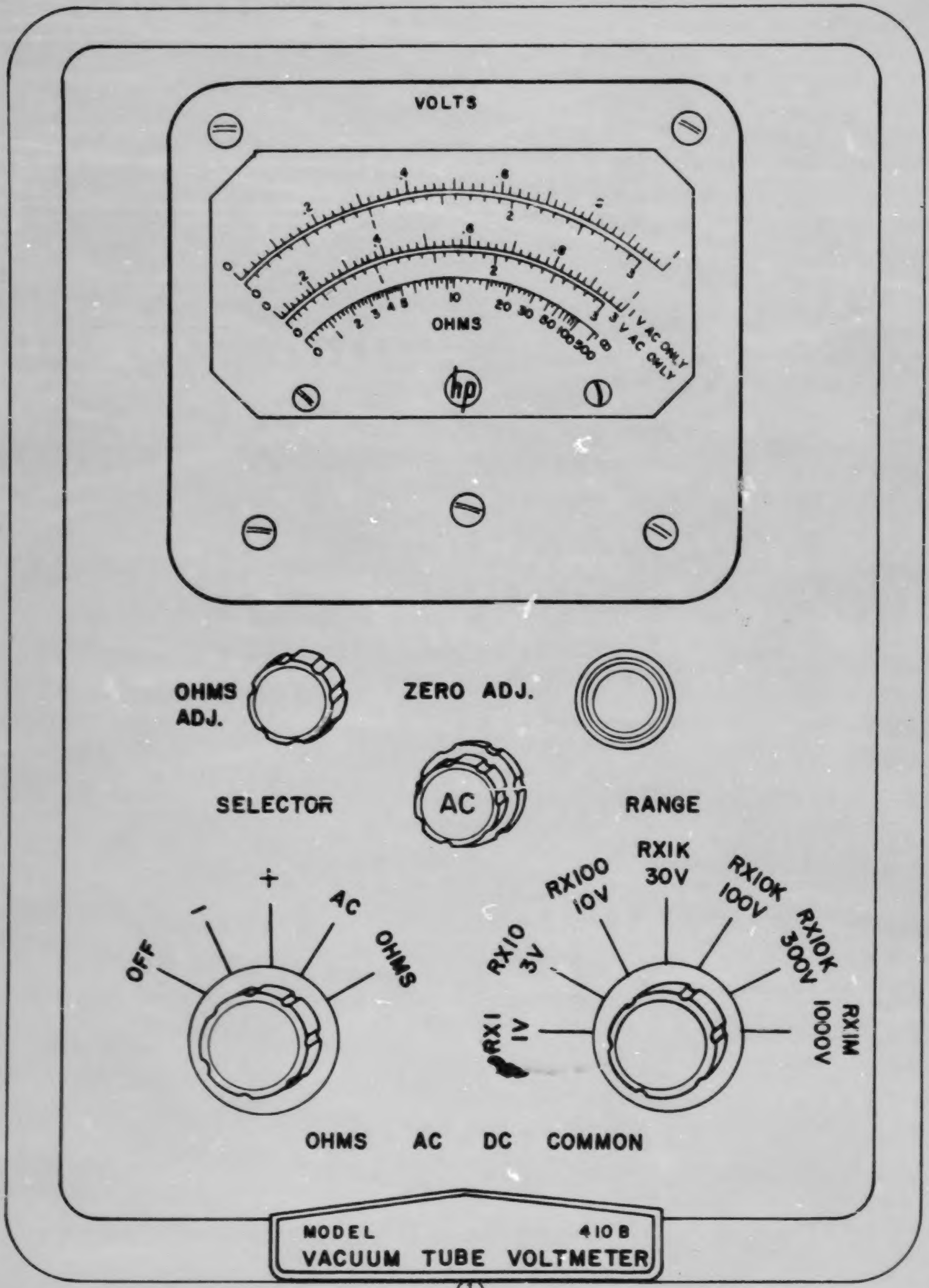
a. Bench Test set-up as described in Section A, Part IV

b. T.O. 12P5-2APN147-2 or Applicable Technical Data

c. Coaxial cables and adaptors

d. Insulated screw driver

e. Electronic Voltmeter (1), Model 410B or equivalent


VOLTS
OHMS
1 V AC ONLY
3 V AC ONLY
hp
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX10K 300V
RX1M 1000V
OHMS AC DC COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

(1)

PRE-TEST SET-UP

a. Perform an operational checkout of the radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

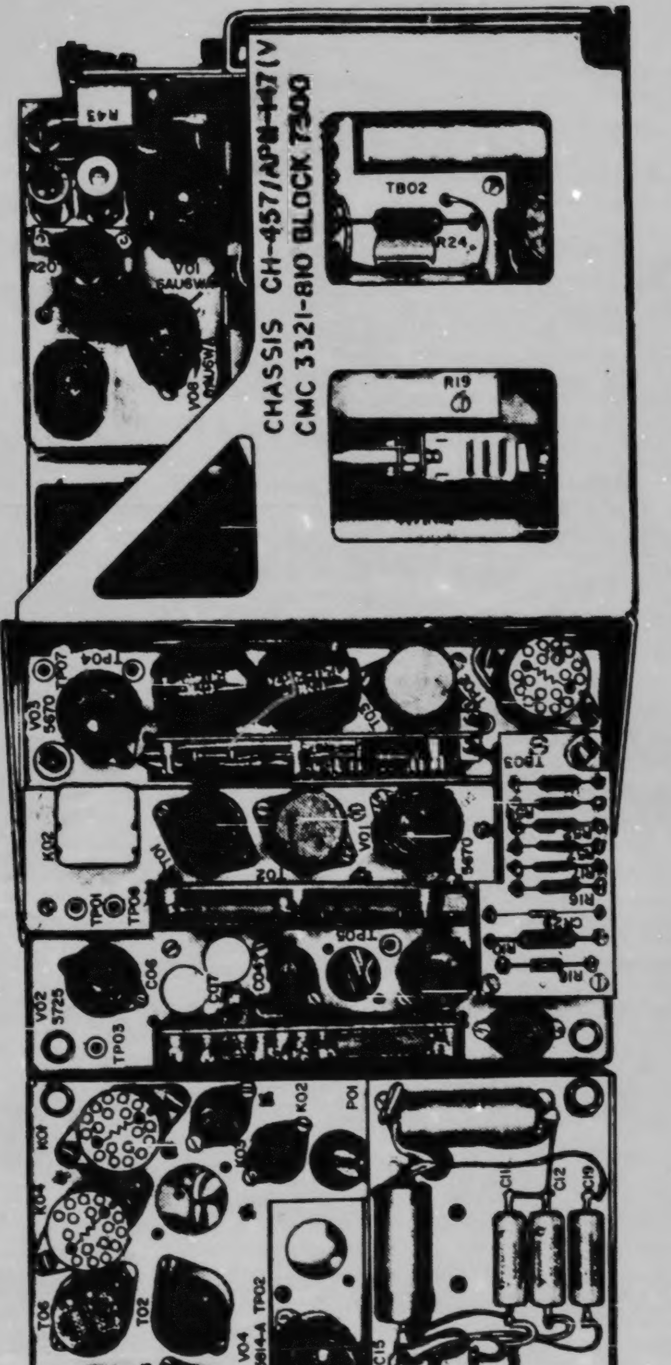
b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-7932 located on the Electronic Control Amplifier as shown on opposite page. Note its position.

e. Rotate R-7932 ten 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.


CHASSIS CH-457/APN-147(V)
CMC 3321-810 BLOCK 7300
R43
TB02
R24
R19
V01 6AU6WA
V08 6AU6WA
V03 5670
TP04
TP07
TP03
K02
TP01
TP06
V01 5670
T01
T02
T03
TP05
V02 5725
C06
C07
C05
R16
R18
K01
K04
K03
K02
P01
T06
T07
V04 5814-A
TP02
V03 5814-A
V02 5670
TP01
C11
C12
C19
C15
R29

AL-3

TEST ADMINISTRATION PROCEDURES

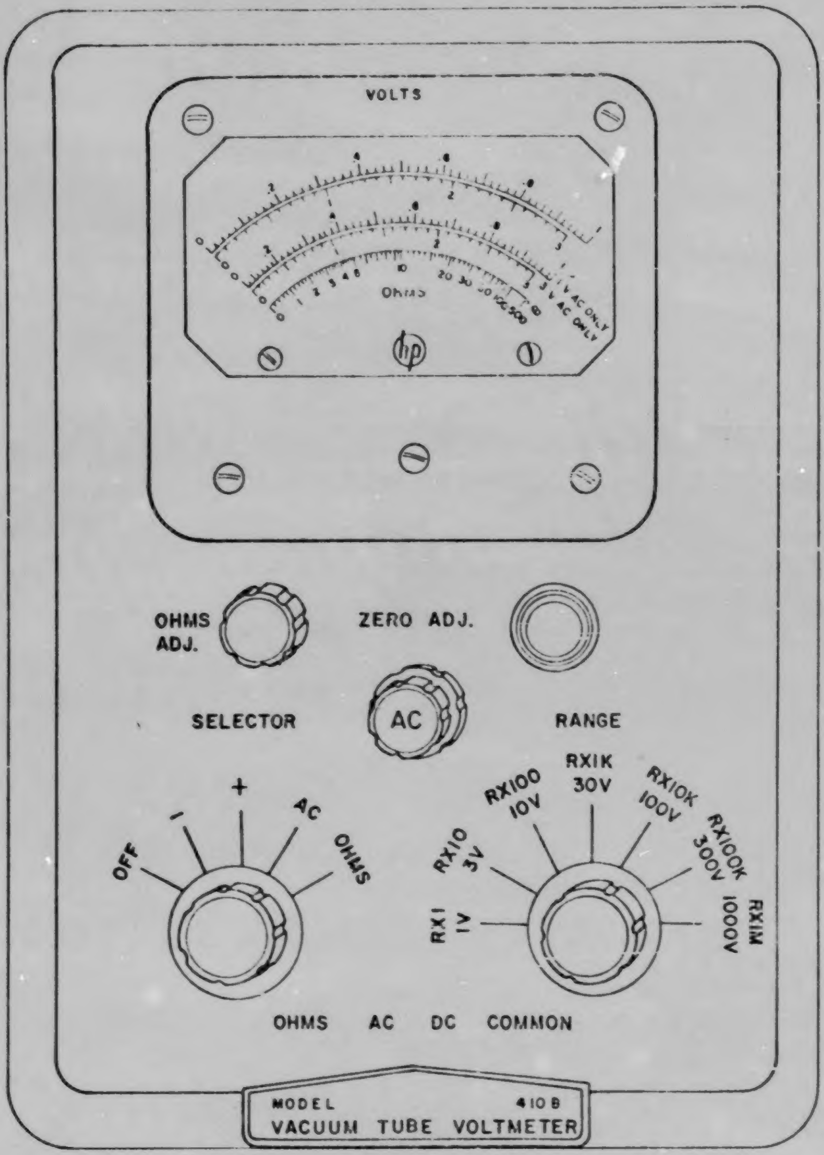
a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:
   1. ungrounded test or prime equipment
   2. uninsultated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


VOLTS
OHMS
AC ONLY
AC ONLY
hp
OHMS ADJ.
ZERO ADJ.
SELECTOR
AC
RANGE
OFF
-
+
AC
OHMS
RX1 1V
RX10 3V
RX100 10V
RX1K 30V
RX10K 100V
RX100K 300V
RX1M 1000V
OHMS
AC
DC
COMMON
MODEL 410B
VACUUM TUBE VOLTMETER

NOTE: Technician will connect VTVM to various test points to complete this alignment. Do not check for set-up. Page 345 indicates proper test results.

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Groundspeed and Drift Circuit alignment is within tolerance limits.

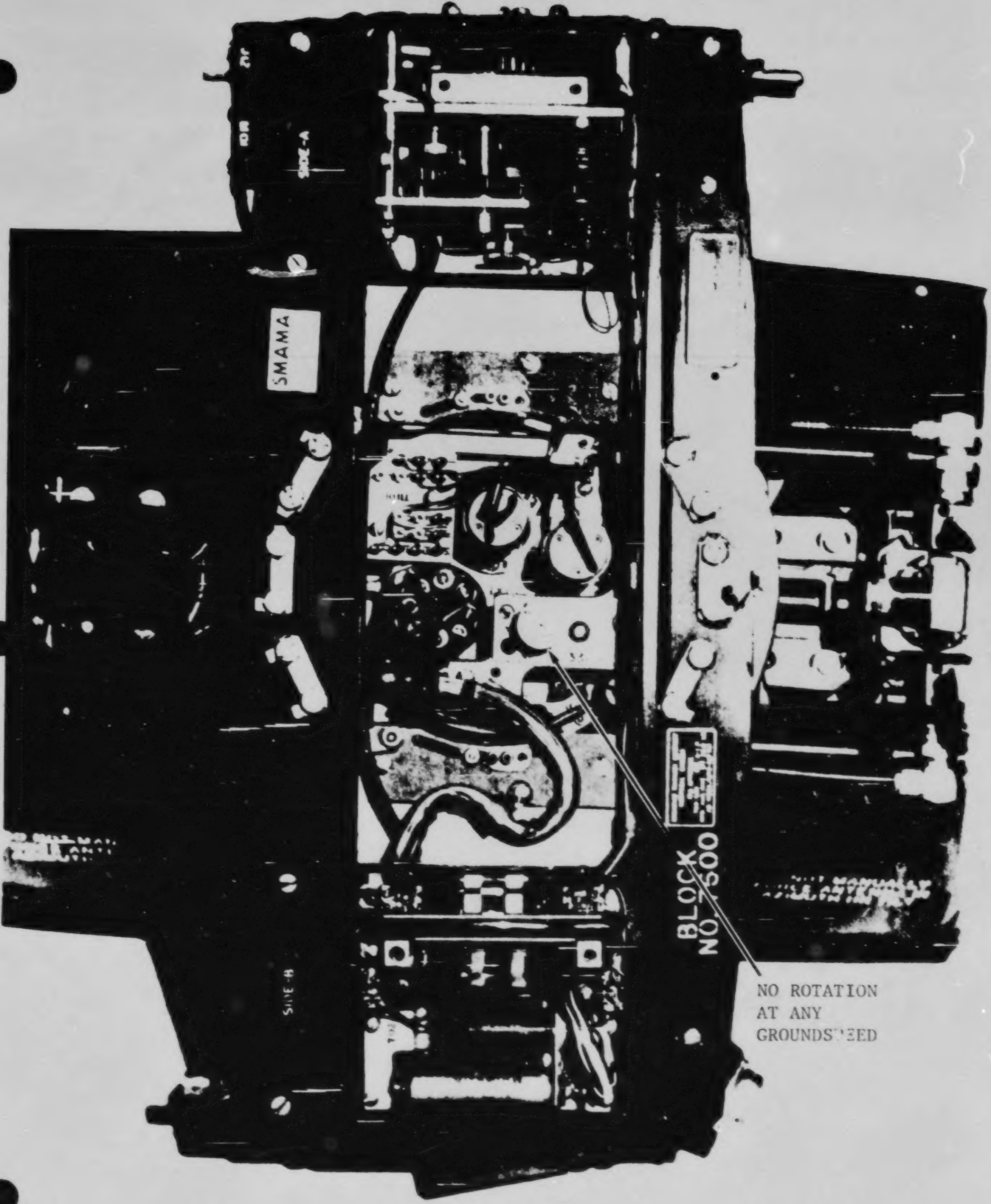
b. This is done as follows:

    1. No rotation of manual drift knob. (See opposite page)

c. Have technician complete question I on the Performance Evaluation Sheet.

d. Collect sheets and mark question II.

AL-3


SMAMA
SIDE-A
SIDE-B
BLOCK NO 1500

NO ROTATION
AT ANY
GROUNDSPEED

AL-3

POST-TEST RECOVERY

a. If technician successfully accomplished the adjustment, recovery is completed.

b. If technician was unable to perform the adjustment, return R-7932 to its original position.

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

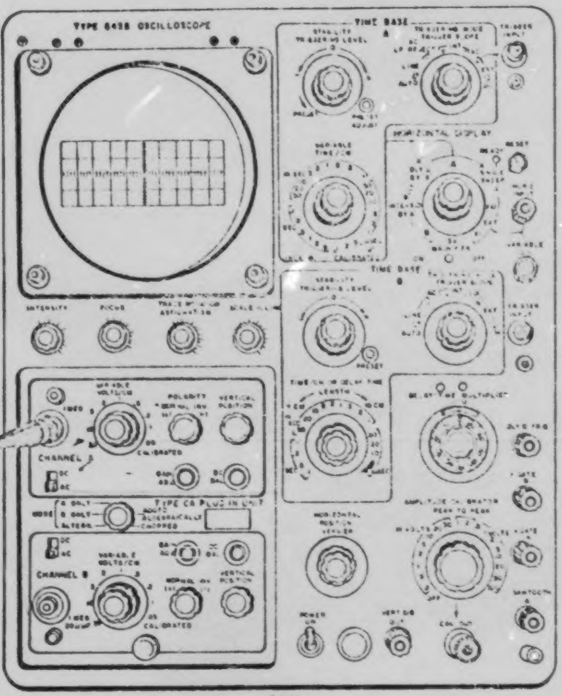
AL-4, Computer Binary Division Ratio Alignment

TIME ALLOTTED

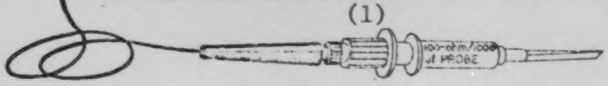
45 minutes

SUPPORT MATERIALS REQUIRED

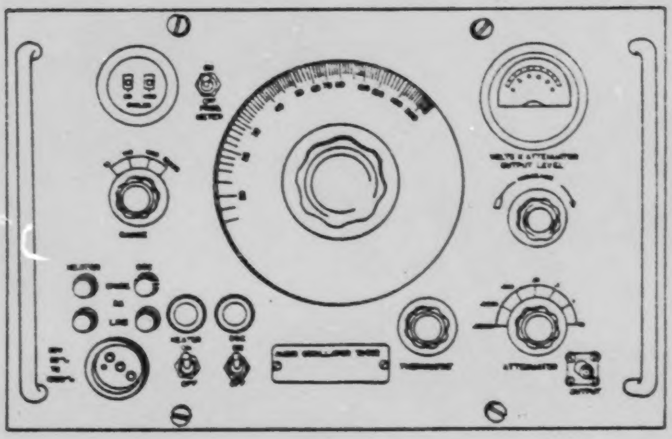
a. Computer Bench Test set-up as described in Section A, Part VII
b. T.O. 5N1-3-8-2 or Applicable Technical Data
c. Audio Oscillator (3), TS-382
d. Tektronics Oscilloscope, (1), Model 545B
e. Frequency Meter (4), AN/USM-26 or equivalent
f. Coaxial Cables and Adaptors
g. Insulated Screw Driver
h. Insulated Alligator and Banana Plug Shorting Leads
i. 100 K-ohm - 1000 uf Test Probe (2)


TYPE 543B OSCILLOSCOPE
TIME BASE A
HORIZONTAL DISPLAY
TIME BASE B
INTENSITY
FOCUS
CHANNEL A
CHANNEL B
TYPE CA PLUG-IN UNIT
CALIBRATED
POWER ON

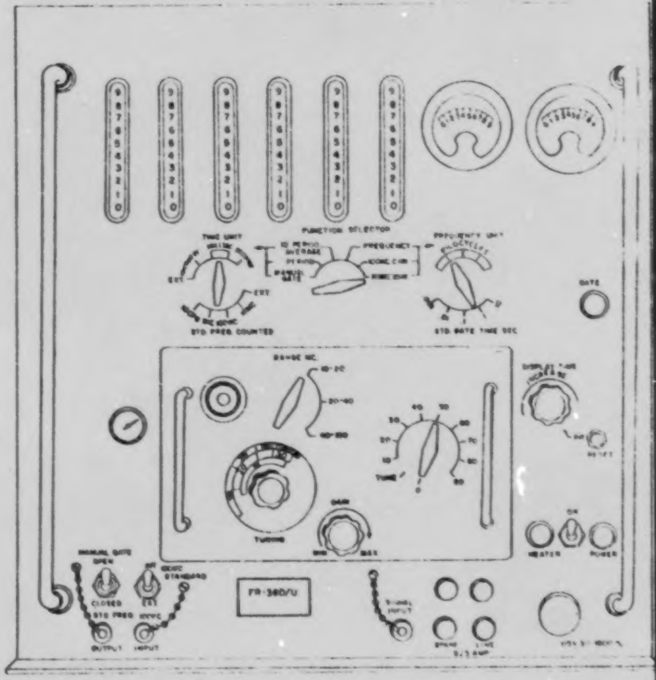
(1)


PROBE

(2)


VOLTS & ATTENUATOR OUTPUT LEVEL
HEATER
ATTENUATOR

(3)


TIME UNIT
FUNCTION SELECTOR
FREQUENCY UNIT
STD FREQ COUNTED
STD GATE TIME SEC
GATE
RANGE MC
TUNING
GAIN
HEATER
POWER
MANUAL GATE OPEN
CLOSED
STD FREQ OUTPUT
INPUT
SIGNAL INPUT
FR-38D/U

(4)

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A. Part VIII.

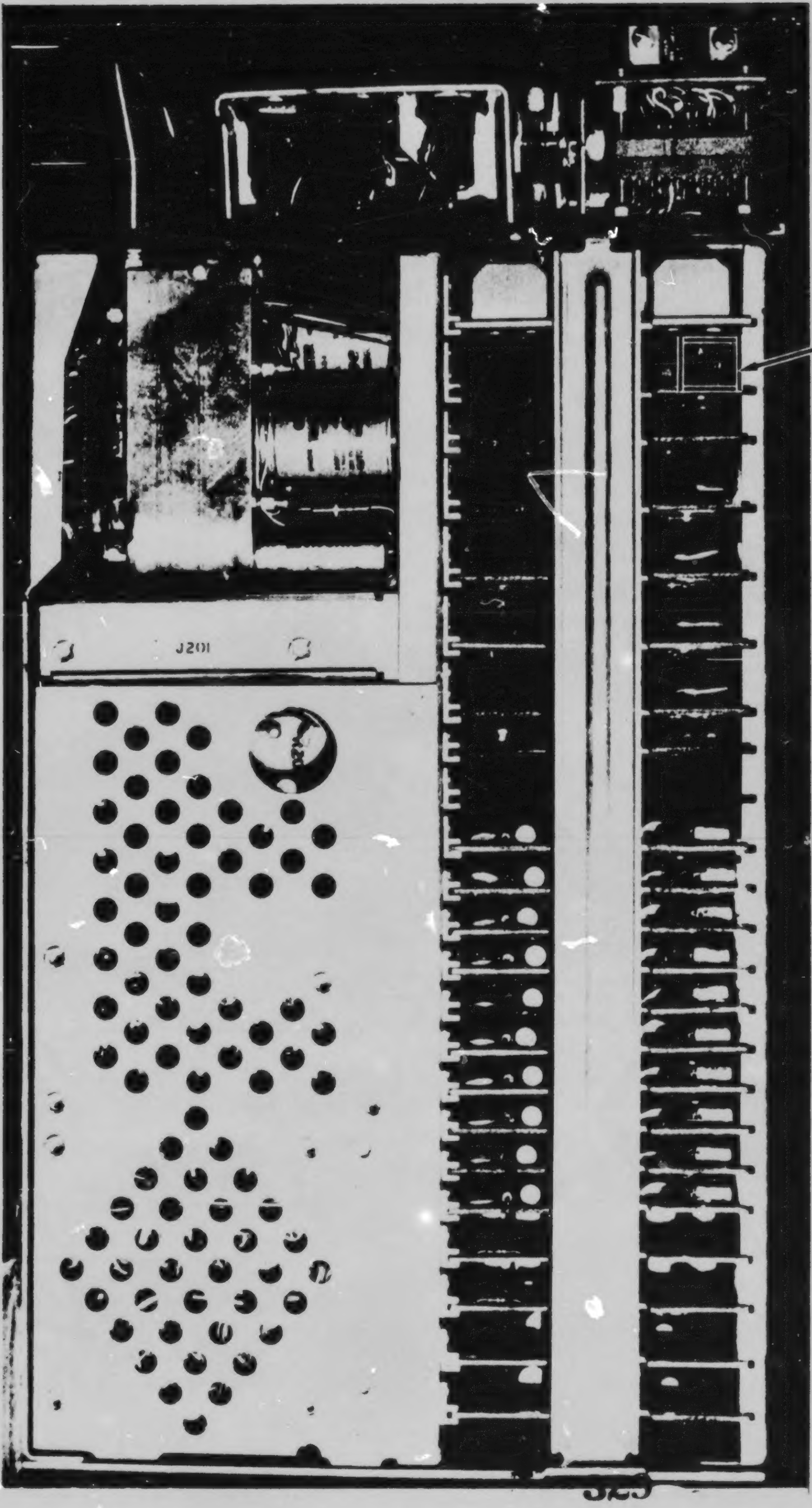
b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-1207. It is located on the computer as shown on opposite page. Note its position.

e. Rotate R-1207 five 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.



J201

AL-4

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

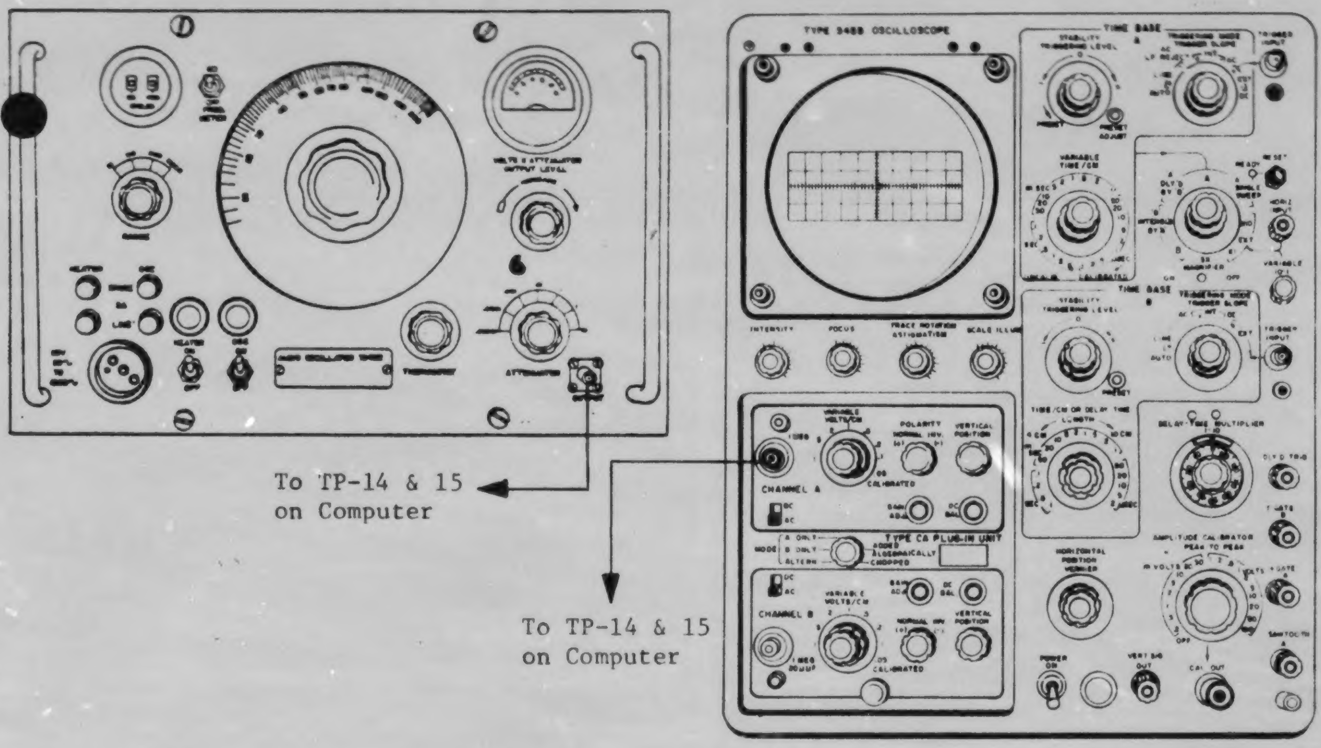
b. Note the time and have the technician begin the test.

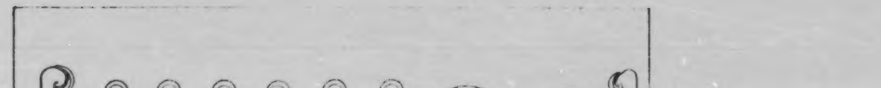
c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


TYPE 545B OSCILLOSCOPE
TIME BASE A
TIME BASE B
INTENSITY
FOCUS
SCALE ILLUM
CHANNEL A
CHANNEL B
TYPE CA PLUG-IN UNIT
DELAY-TIME MULTIPLIER
AMPLITUDE CALIBRATOR PEAK TO PEAK
POWER ON
CAL OUT
To TP-14 & 15
on Computer
To TP-14 & 15
on Computer


FUNCTION SELECTOR
TIME UNIT
FREQUENCY UNIT
STD FREQ COUNTED
STD RATE TIME SEC
GATE
RANGE MC
DISPLAY TIME
RESET
TUNING
GAIN
HEATER
POWER
MANUAL GATE
OPEN
CLOSED
STD FREQ
OUTPUT
INPUT
SIGNAL INPUT
SPARE
LINE
To TP-20
on Computer/
TS-382

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

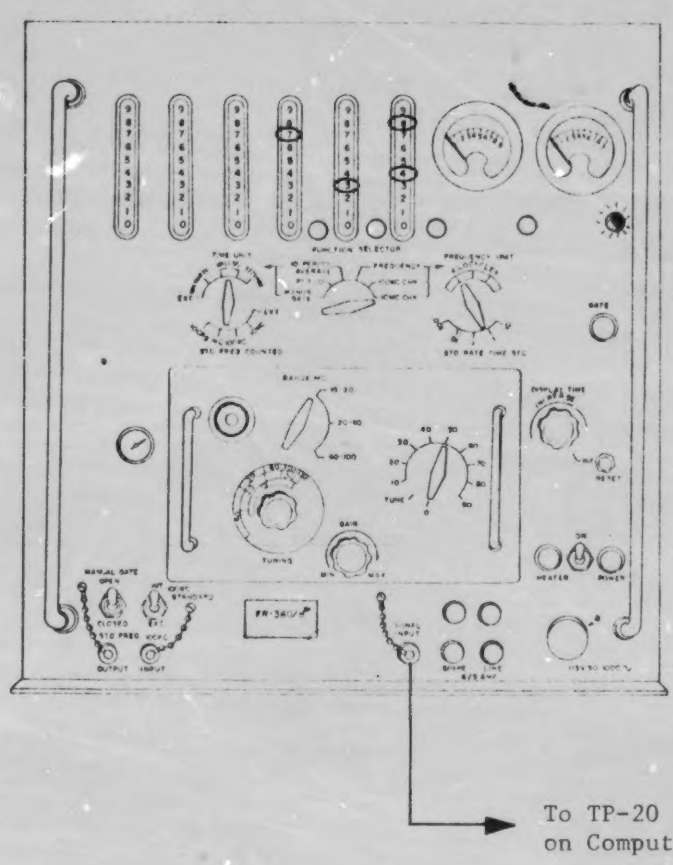
a. Have the technician demonstrate that the Computer Binary Division Ratio alignment is within tolerance limits.

b. This is done as follows:

- With Frequency Meter lead connected to TP-20 counter will read between 73,400 and 73,800 over a 10 Period Average. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


FUNCTION SELECTOR
TIME UNIT
FREQUENCY UNIT
GATE
RANGE MC
DISPLAY TIME
RESET
TUNING
GAIN
MIN
MAX
ON
HEATER
POWER
MANUAL GATE
OPEN
CLOSED
STD FREQ
OUTPUT
INPUT
SIGNAL INPUT
SPARE
LINE

To TP-20
on Computer

POST-TEST RECOVERY

a. If technician successfully accomplished the alignment, recovery is completed.

b. If technician was unable to perform the alignment, return R-1207 to its original position.

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

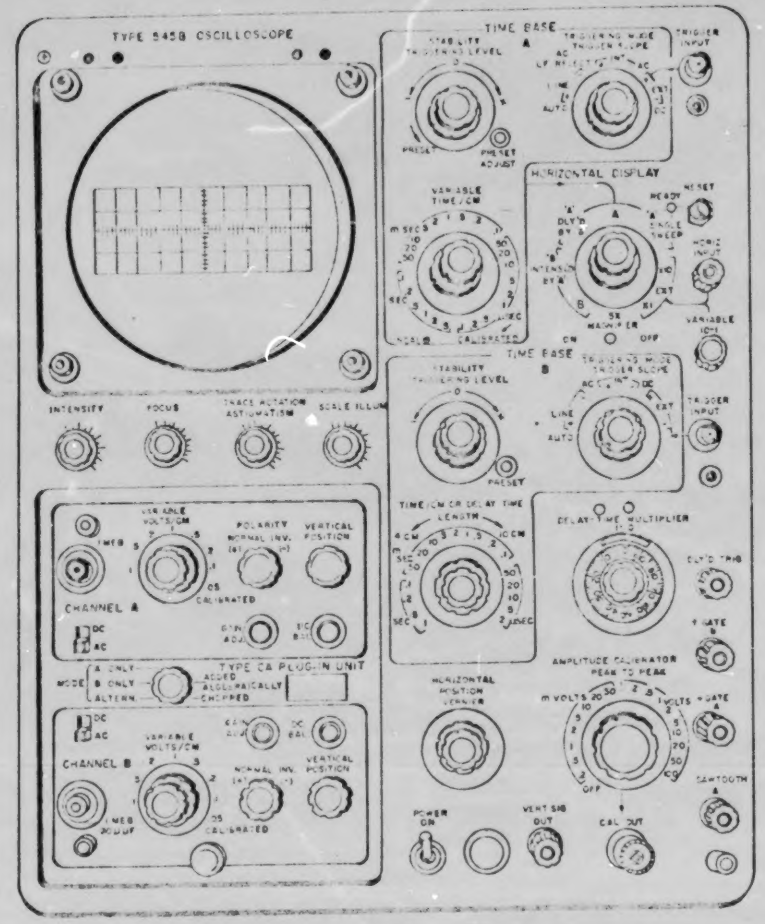
AL-5, Computer Resolver Bridge Balancing

TIME ALLOTTED

30 minutes

SUPPORT MATERIAL REQUIRED

a. Computer Bench Test Set-up as described in Section A, Part VII
b. Tektronics Oscilloscope (1) Model 545B
c. Resolver Balancing Jig (2)
d. Insulated Screw driver


TYPE 545B OSCILLOSCOPE
TIME BASE A
STABILITY TRIGGERING LEVEL
PRESET
PRESET ADJUST
TRIGGERING MODE TRIGGER SLOPE
TRIGGER INPUT
HORIZONTAL DISPLAY
READY
RESET
SINGLE SWEEP
HORIZ INPUT
VARIABLE TIME/CM
CALIBRATED
MAGNIFIER
ON
OFF
VARIABLE
TIME BASE B
INTENSITY
FOCUS
TRACE ROTATION ASTIGMATISM
SCALE ILLUM
TIME/CM OR DELAY TIME LENGTH
DELAY-TIME MULTIPLIER
DLY'D TRIG
+ GATE B
AMPLITUDE CALIBRATOR PEAK TO PEAK
+ GATE A
SAWTOOTH A
HORIZONTAL POSITION VERNIER
POWER ON
VERT SIG OUT
CAL OUT
VARIABLE VOLTS/CM
POLARITY NORMAL INV.
VERTICAL POSITION
CHANNEL A
DC
AC
TYPE CA PLUG-IN UNIT
MODE
A ONLY
B ONLY
ALTERN.
ADDED ALGEBRAICALLY
CHOPPED
CHANNEL B
GAIN ADJ
DC BAL
1 MEG 20 UUF

(1)

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

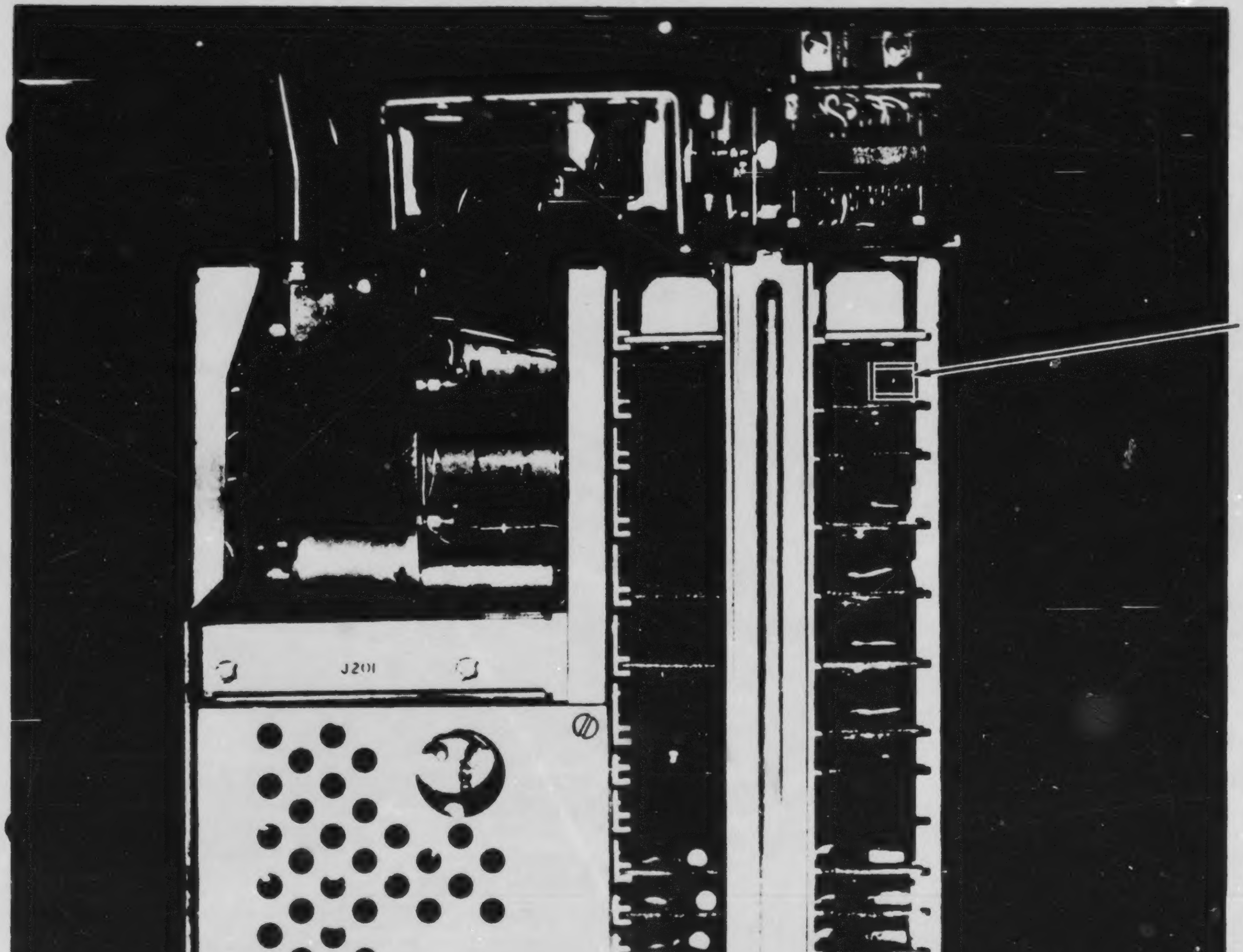
b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

d. Locate R-1209. It is located on the computer, as shown on opposite page. Note its position.

e. Rotate R-1209 ten 360 degree turns counter-clockwise (CCW).

f. Review the technician's Test Instructions to familiarize yourself with them.


J201

AL-5

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

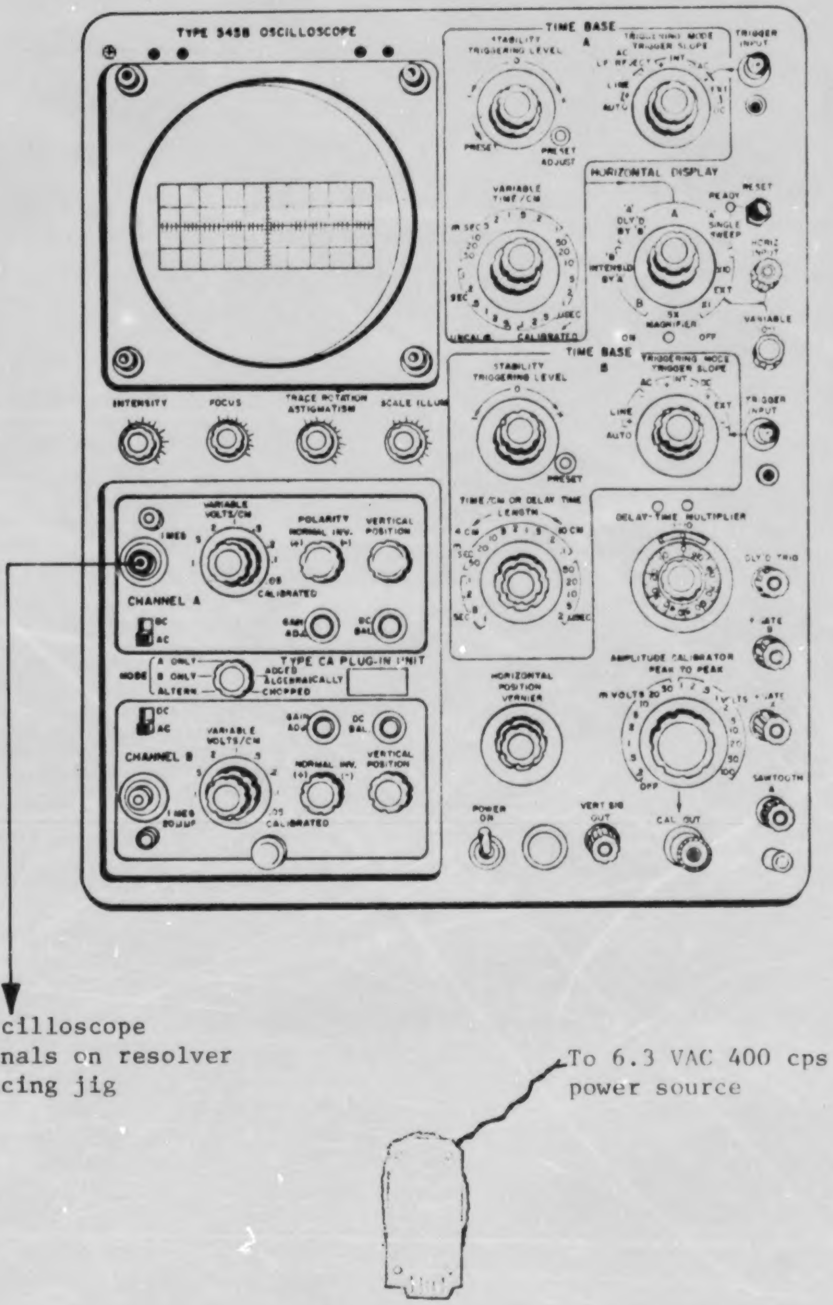
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


TYPE 545B OSCILLOSCOPE
TIME BASE A
STABILITY TRIGGERING LEVEL
TRIGGERING MODE TRIGGER SLOPE
TRIGGER INPUT
PRESET ADJUST
HORIZONTAL DISPLAY
VARIABLE TIME/CM
CALIBRATED
MAGNIFIER
TIME BASE B
INTENSITY
FOCUS
TRACE ROTATION ASTIGMATISM
SCALE ILLUM
VARIABLE VOLTS/CM
POLARITY
VERTICAL POSITION
CHANNEL A
TIME/CM OR DELAY TIME LENGTH
DELAY-TIME MULTIPLIER
TYPE CA PLUG-IN UNIT
MODE
A ONLY
B ONLY
ALTERN
ADDED ALGEBRAICALLY
CHOPPED
CHANNEL B
HORIZONTAL POSITION VERNIER
AMPLITUDE CALIBRATOR PEAK TO PEAK
SAWTOOTH A
POWER ON
VERT SIG OUT
CAL OUT

To oscilloscope terminals on resolver balancing jig

To 6.3 VAC 400 cps power source

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

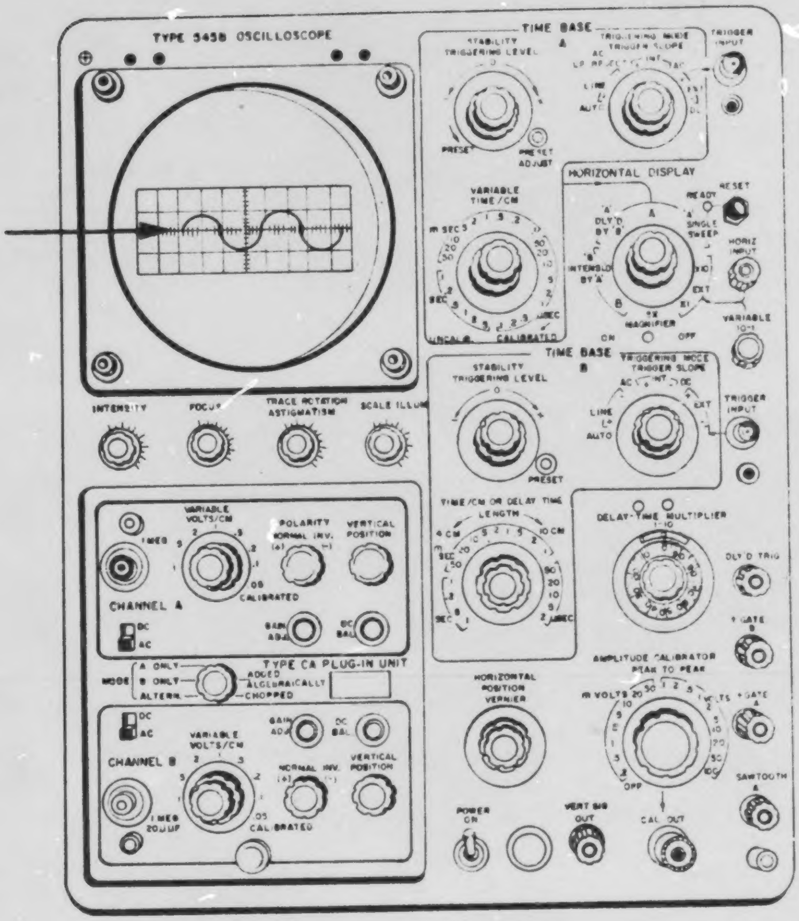
a. Have the technician demonstrate that the Computer Resolver Bridge Balancing alignment is within tolerance limits.

b. This is done as follows:

  - With Oscilloscope leads connected to the Resolver Balancing Jig (Oscilloscope and Ground shown on the jig) scope will read a null-less that 6 millivolts RMS. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


TYPE 545B OSCILLOSCOPE
TIME BASE A
STABILITY TRIGGERING LEVEL
PRESET
PRESET ADJUST
TRIGGERING MODE TRIGGER SLOPE
AC
LF REJECT
INT
DC
LINE
AUTO
EXT
TRIGGER INPUT
HORIZONTAL DISPLAY
VARIABLE TIME/CM
m SEC
SEC
μSEC
UNCALIB.
CALIBRATED
'A' DLY'D BY 'B'
A
'A' SINGLE SWEEP
'B' INTENSIFIED BY 'A'
B
X10
EXT
X1
READY
RESET
HORIZ INPUT
VARIABLE 10-1
5X MAGNIFIER
ON
OFF
TIME BASE B
STABILITY TRIGGERING LEVEL
PRESET
TRIGGERING MODE TRIGGER SLOPE
TRIGGER INPUT
TIME/CM OR DELAY TIME LENGTH
4 CM
10 CM
DELAY-TIME MULTIPLIER
1-10
DLY'D TRIG
+ GATE B
AMPLITUDE CALIBRATOR PEAK TO PEAK
m VOLTS
VOLTS
OFF
+ GATE A
SAWTOOTH A
HORIZONTAL POSITION VERNIER
POWER ON
VERT SIG OUT
CAL OUT
INTENSITY
FOCUS
TRACE ROTATION ASTIGMATISM
SCALE ILLUM
VARIABLE VOLTS/CM
POLARITY NORMAL INV.
(+)
(−)
VERTICAL POSITION
1 MEG
CALIBRATED
CHANNEL A
DC
AC
GAIN ADJ
DC BAL
TYPE CA PLUG-IN UNIT
MODE
A ONLY
B ONLY
ALTERN.
ADDED ALGEBRAICALLY
CHOPPED
CHANNEL B
1 MEG 20μμF

Null - lowest amplitude

AL-5

POST-TEST RECOVERY

a. If technician successfully accomplished the alignment, recovery is completed.

b. If technician was unable to perform the alignment, return R-1209 to its original position.

c. Perform operational checkout to determine if set is still functioning properly.

d. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

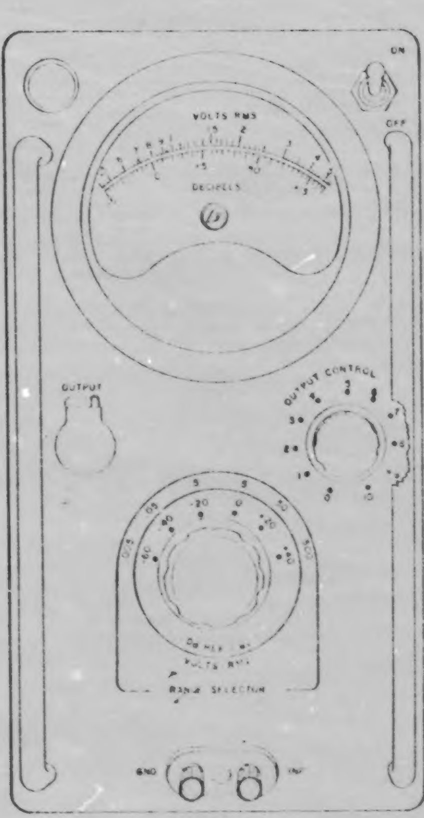
AL-6, Zeroing Transmitter Synchros TX-501, TX-502, TX-503

TIME ALLOTTED

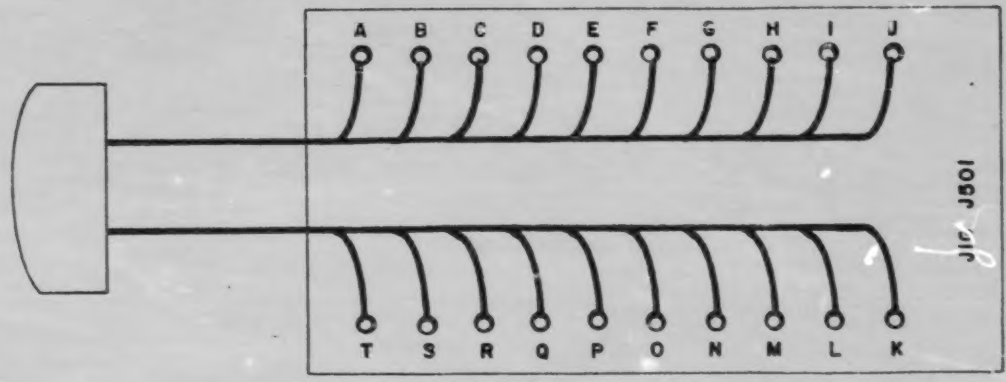
30 minutes

SUPPORT MATERIALS REQUIRED

a. Computer Bench Test set-up as described in Section A, Part VII
b. T.O. 5N1-3-8-2 or Applicable Technical data
c. Electronic Voltmeter (1), ME-26 or equivalent
d. J-501 Test Jig (2)
e. Blade-type Screw driver
f. Insulated Alligator and Banana Plug Shorting Leads


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
-20
0
+20
+40
VOLTS RMS
RANGE SELECTOR
GND
INP

(1)


A
B
C
D
E
F
G
H
I
J
JIG J501
T
S
R
Q
P
O
N
M
L
K

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

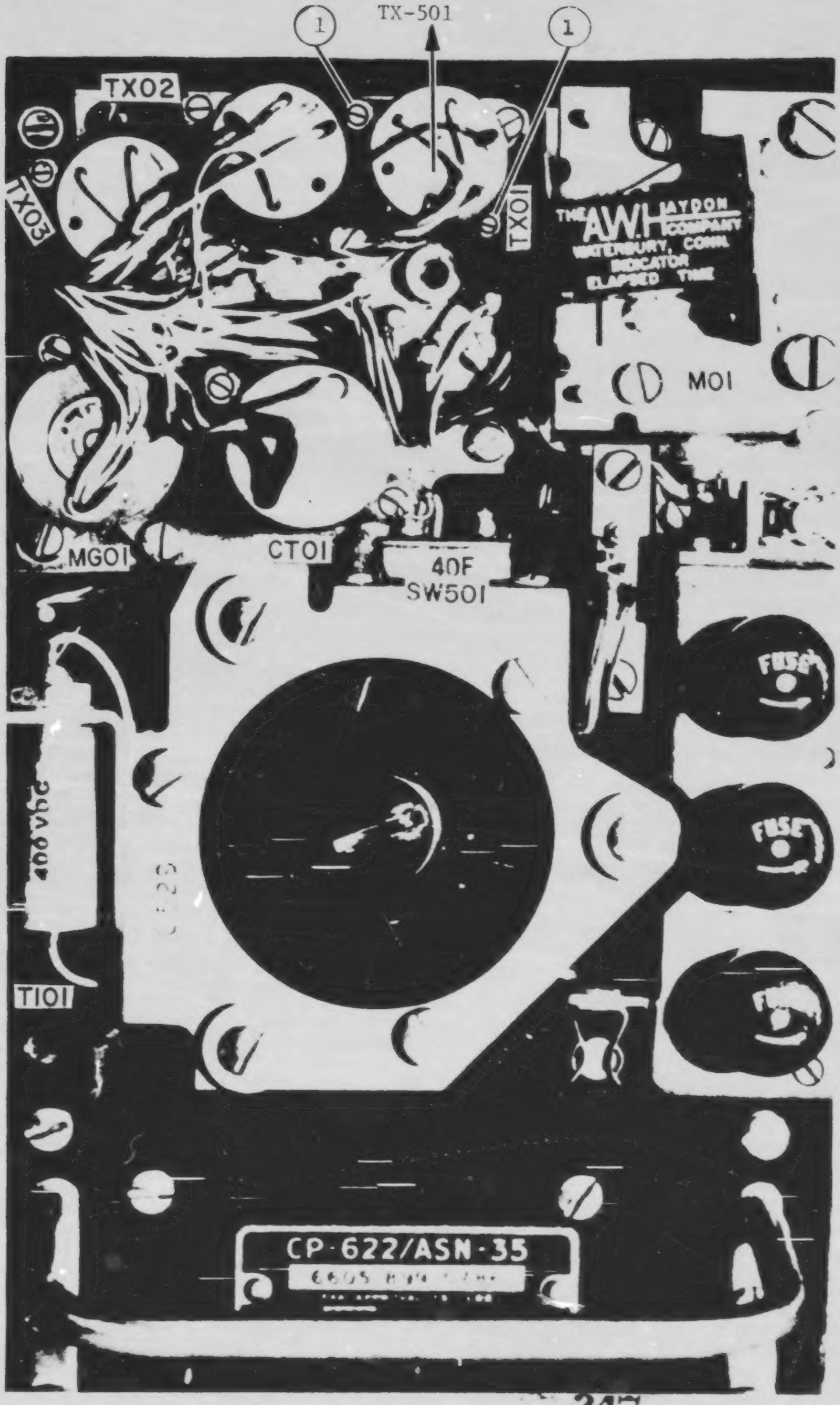
d. Locate TX-501. It is located on the computer, as shown on the opposite page. Note its position.

e. Loosen the two set screws (1) that hold TX-501 in position.

f. Rotate TX-501 forty-five degrees (45^o) counter-clockwise (CCW).

g. Tighten the two set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


TX-501
1
1
TX02
TX03
TX01
THE A.W.HAYDON COMPANY
WATERBURY, CONN.
INDICATOR
ELAPSED TIME
M01
MG01
CT01
40F
SW501
FUSE
FUSE
FUSE
T101
CP-622/ASN-35

AL-6

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

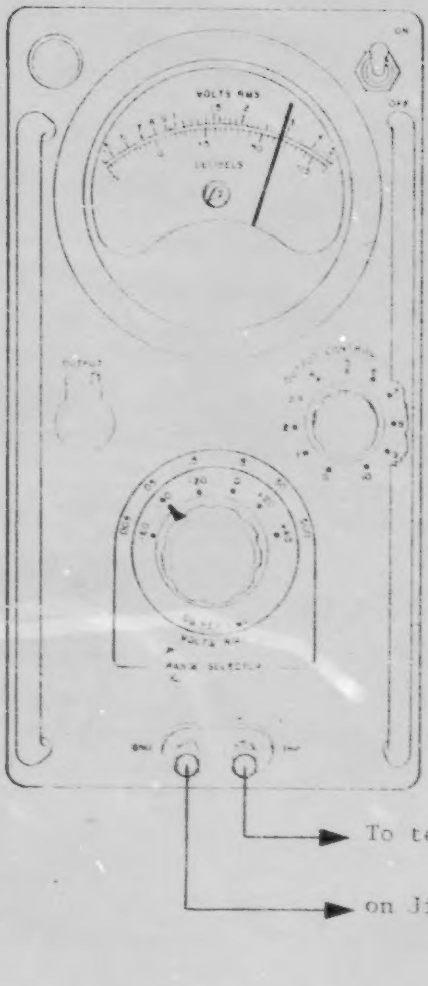
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

   1. ungrounded test or prime equipment
   2. uninsulated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
RANGE SELECTOR
GND

To terminals

on Jig J-501

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

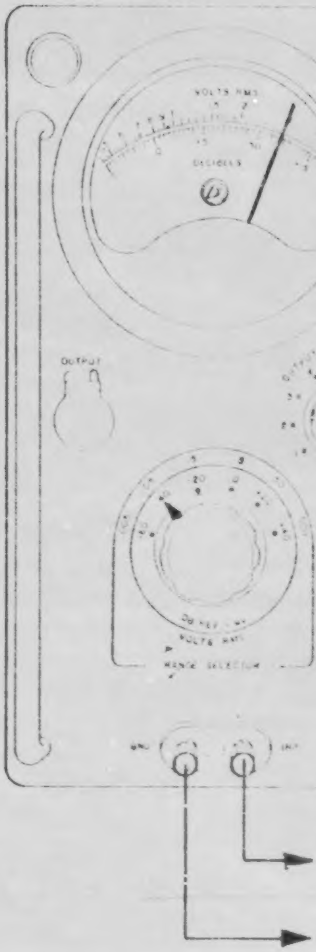
a. Have the technician demonstrate that the Transmitter Synchros TX-501, TX-502 and TX-503 alignment is within tolerance limits.

b. This is done as follows:

   - With VTVM leads connected, to pins C & B of J-501 test jig, rotates TX-501 slightly CW and then CCW.
   - VTVM needle will rise when TX-501 is turned in either direction, if it has been properly aligned. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheet and complete question II.


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MW
VOLTS RMS
RANGE SELECTOR
GND

To pins C & B of

Jig J-501

POST-TEST RECOVERY

a. Have the technician secure the set screws holding TX-501, TX-502, TX-503.

b. If technician successfully accomplished the alignment, recovery is completed.

c. If technician was unable to perform the alignment, return TX-501 to its original position. Also TX-502 and TX-503 if misaligned.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

AL-7, Zeroing Control Transformer CT-501

TIME ALLOTTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Computer Bench Test Set-up as described in Section A, Part VII

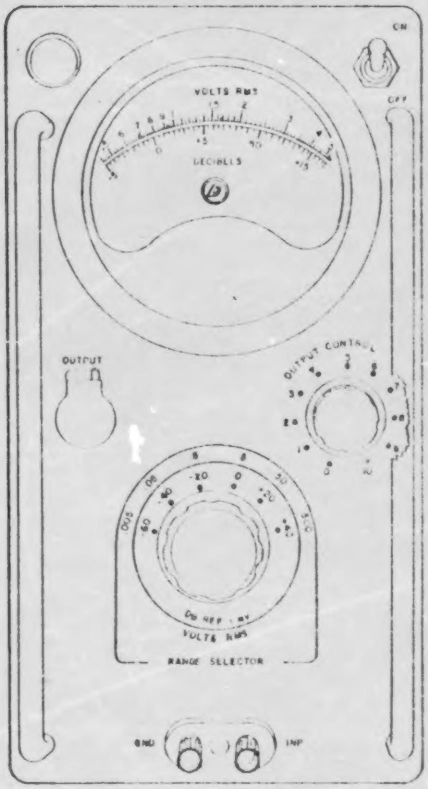
b. T.O. 5N1-3-8-2 or Applicable Technical Data

c. Electronic Voltmeter (1), ME-26 of equivalent

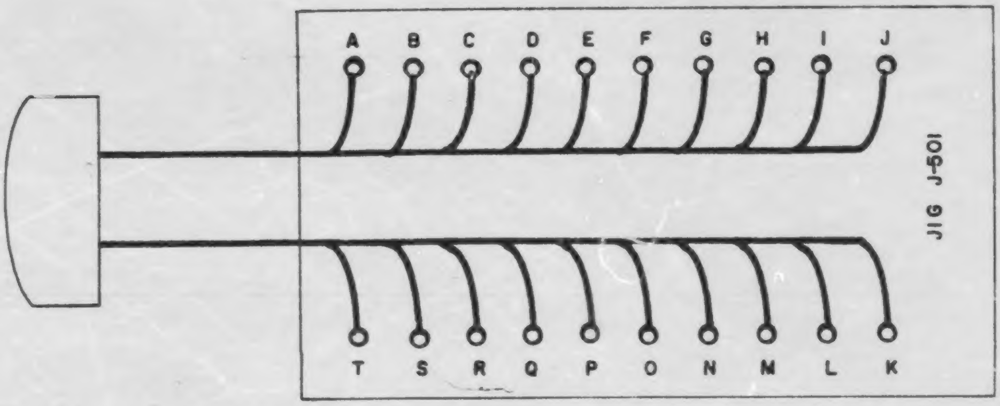
d. J-501 Test Jig (2)

e. Blade-Type Screw Driver

f. Insulated Alligator and Banana Plug Shorting Leads


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND
INP

(1)


A
B
C
D
E
F
G
H
I
J
JIG J-501
T
S
R
Q
P
O
N
M
L
K

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

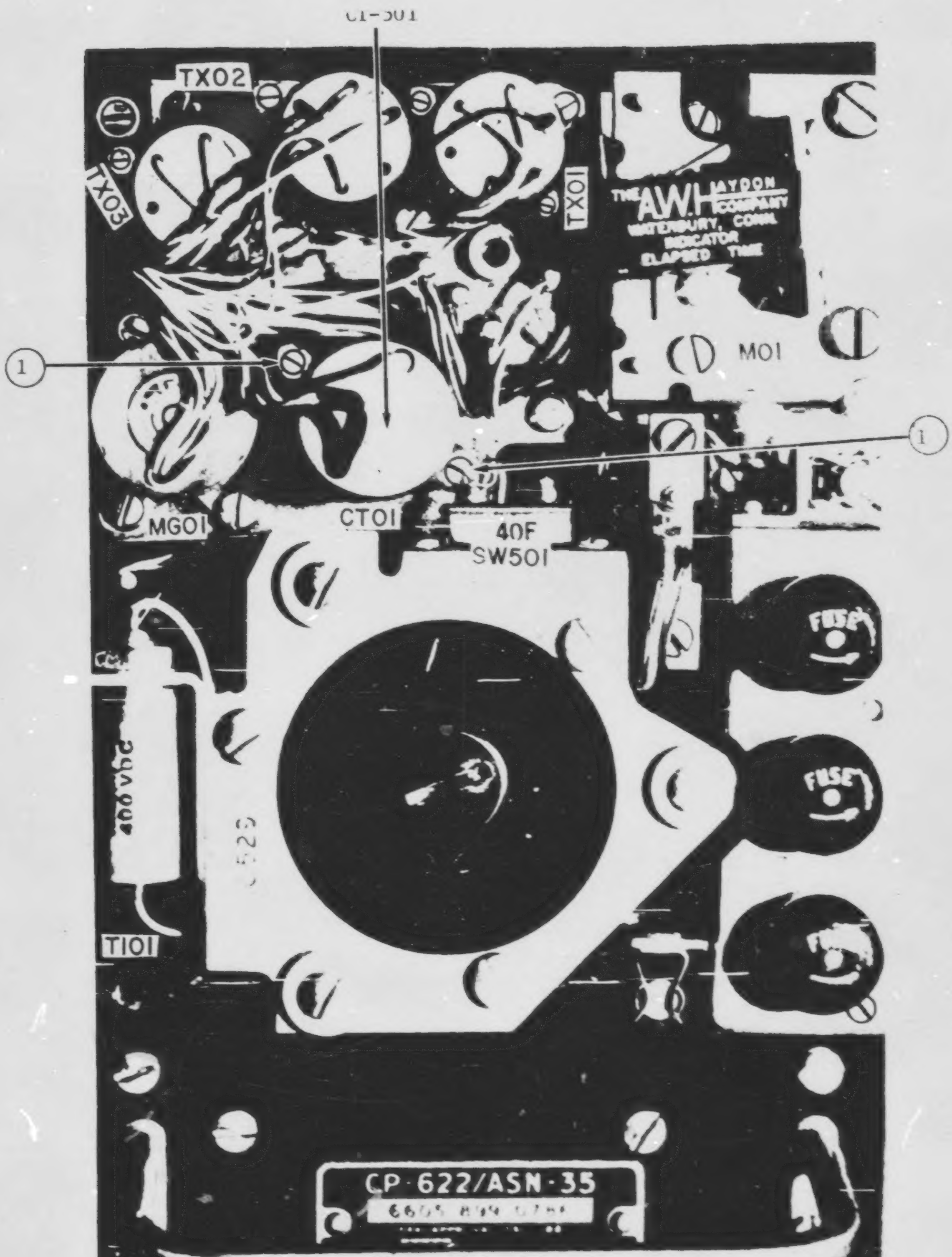
d. Locate CT-501. It is located on the computer as shown on the opposite page. Note its position.

e. Loosen the two set screws (1) that hold CT-501 in position.

f. Rotate CT-501 forty-five degrees (45°) counter-clockwise (CCW).

g. Tighten the two set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


CT-501
TX02
TX03
TX01
THE A.W. HAYDON COMPANY
WATERBURY, CONN
INDICATOR
ELAPSED TIME
1
1
MO1
MG01
CT01
40F
SW501
FUSE
FUSE
FUSE
T101
CP-622/ASN-35

AL-7

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

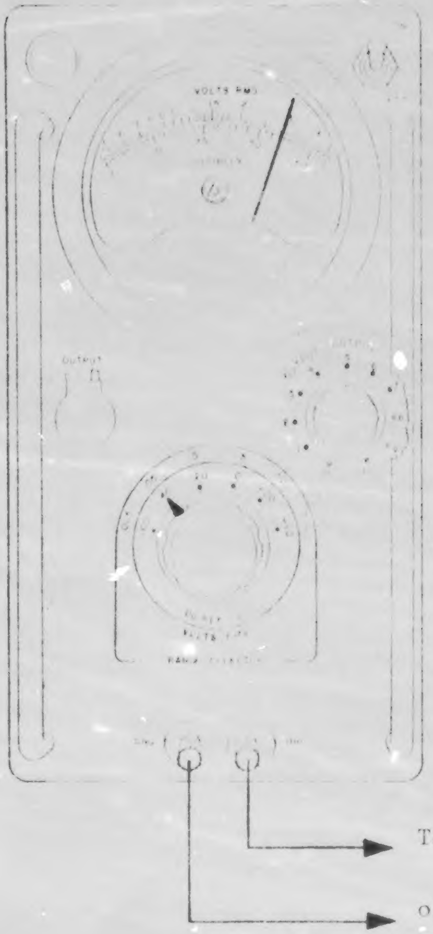
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

   1. ungrounded test or prime equipment
   2. uninsulated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)



To terminals L & J

of Jig J-501

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Control Transformer CT-501 alignment is within tolerance limits.

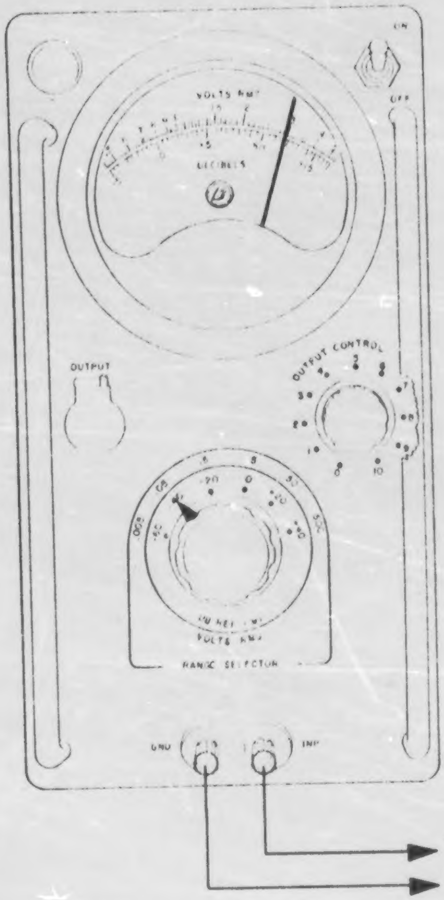
b. This is done as follows:

  - With VTVM leads connected to pins L & J of 501 test jig, and gear train on zero, rotates CT-501 slightly CW and then CCW.

  - VTVM needle will rise when CT-501 is turned in either direction, if it has been properly aligned. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
RANGE SELECTOR
GND
INP

To terminals L & J
of Jig J-501

AL-7

POST-TEST RECOVERY

a. Have the technician secure the set screws holding CT-501.

b. If technician successfully accomplished the alignment, recovery is completed.

c. If technician was unable to perform the alignment, return CT-501 to its original position.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

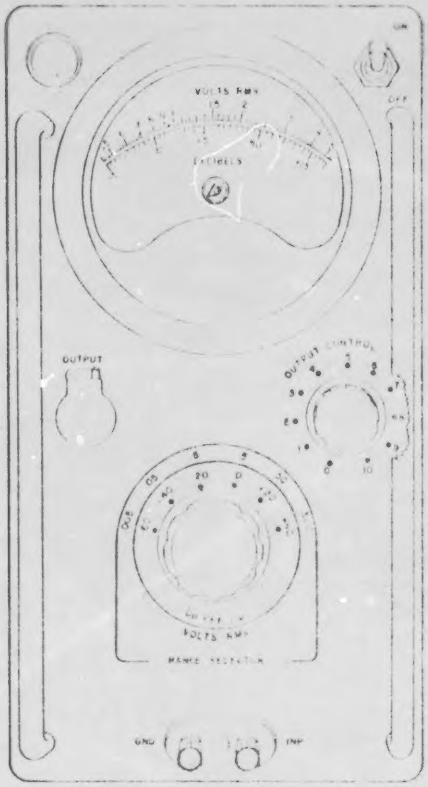
AL-8, Zeroing Control Transformer CT-301

TIME ALLOTTED

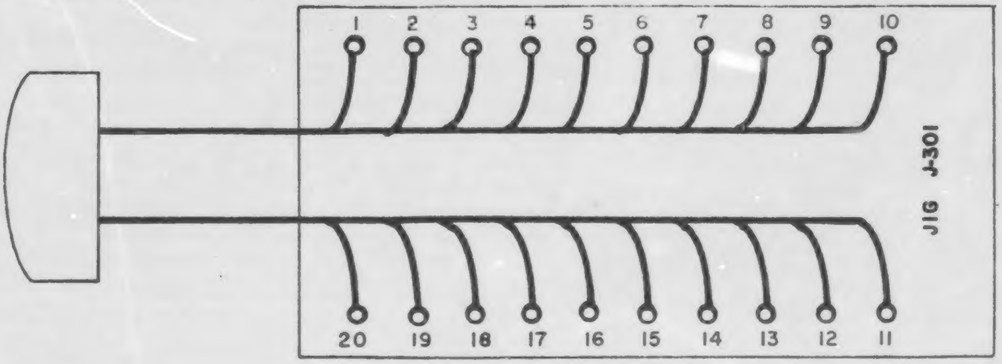
30 minutes

SUPPORT MATERIALS REQUIRED

a. Computer Bench Test Set-up as described in Section A, Part VII
b. T.O. 5N1-3-8-2 or Applicable Technical Data
c. Electronic Voltmeter (1), ME-26 or equivalent
d. J-301 Test Jig (2)
e. Insulated Alligator and Banana Plug Shorting Leads
f. Blade-type Screw driver


ON
VOLTS RMS
DECIBELS
OFF
OUTPUT
OUTPUT CONTROL
RANGE SELECTOR
VOLTS RMS
GND
INP

(1)


JIG J-301

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

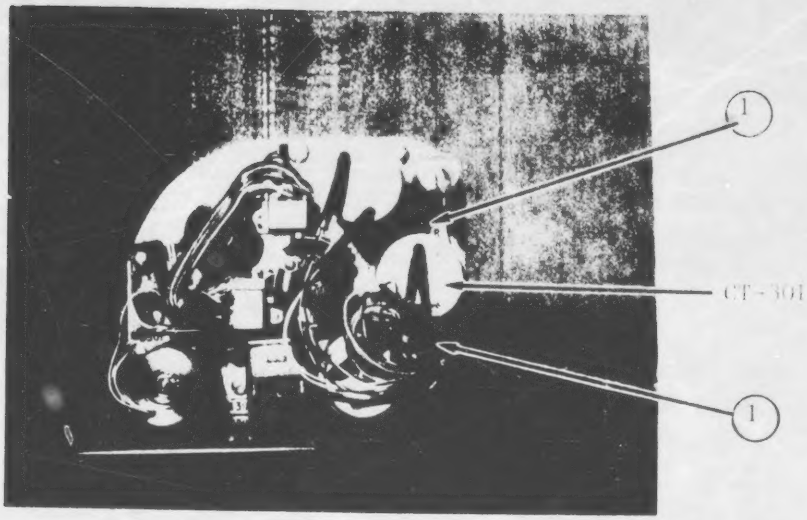
d. Locate CT-301. It is located on the computer as shown on the opposite page. Note its position.

e. Loosen the two set screws (1) that hold CT-301 in position.

f. Rotate CT-301 forty-five degrees (45°) counter-clockwise (CCW).

g. Tighten the two set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


1
CT-301
1

AL-8

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

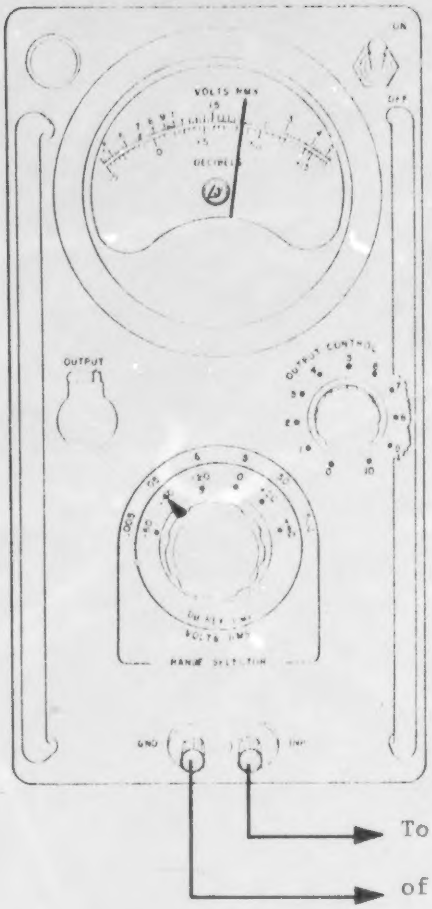
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

   1. ungrounded test or prime equipment
   2. uninsulated wires or connections
   3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
INP

To terminals 10 & 11
of Jig J-301

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

a. Have the technician demonstrate that the Control Transformer CT-301 alignment is within tolerance limits.

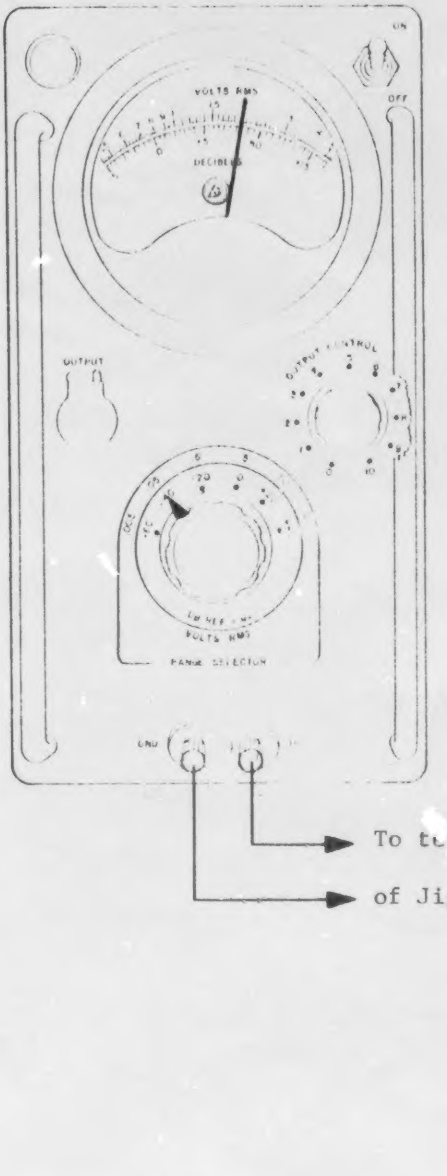
b. This is done as follows:

- With VTVM leads connected to pins 10 and 11 of J-301 test jig and cam on zero, technician rotates CT-301 slightly CW and then CCW.

- VTVM needle will rise when CT-301 is turned in either direction, if it has been properly aligned. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND

To terminals 10 & 11

of Jig J-301

AL-8

POST-TEST RECOVERY

a. Have the technician secure the set screws holding CT-301.

b. If technician successfully accomplished the alignment, recovery is completed.

c. If technician was unable to perform the alignment, return CT-301 to its original position.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

AL-9, Zeroing Transmitter Synchro TX-302

TIME ALLOTED

30 minutes

SUPPORT MATERIALS REQUIRED

a. Computer Bench Test Set-up as described in Section A, Part VII

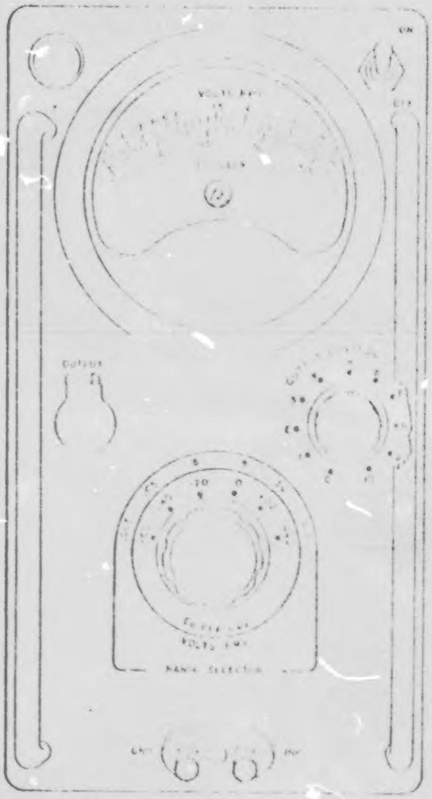
b. T.O. 5N1-3-8-2 or Applicable Technical Data

c. Electronic Voltmeter (1), ME-26 or equivalent

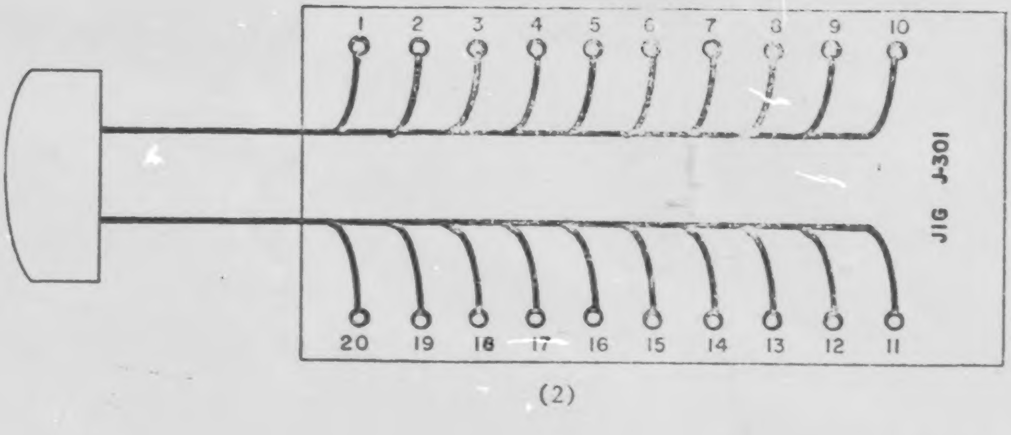
d. J-301 Test Jig (2)

e. Insulated Alligator and Banana Plug Shorting Leads

f. Blade type Screw driver


ON
OUTPUT
RANGE SELECTOR

(1)


JIG J-301

(2)

AL-9

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

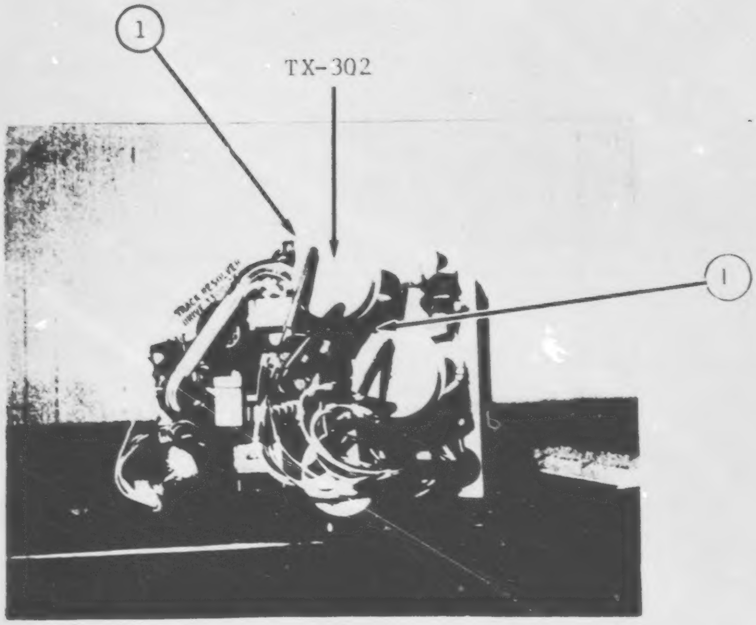
d. Locate TX-302. It is located on the computer as shown on opposite page. Note its position.

e. Loosen the two set screws (1) that hold TX-302 in position.

f. Rotate TX-302 forty-five degrees (45°) counter-clockwise (CCW).

g. Tighten the two set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


1
TX-302
1
TRACK RESOLVER
DRIVE

AL-9

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

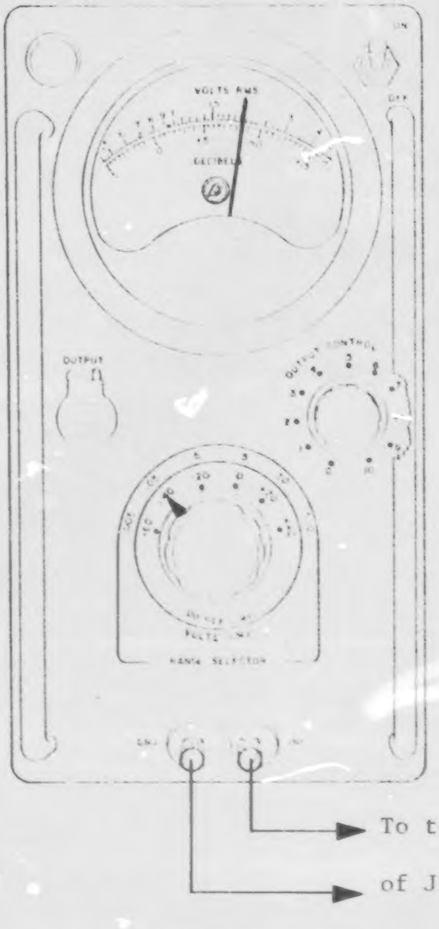
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
RANGE SELECTOR

To terminals 3 & 4

of Jig J-301

AL-9

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFORMANCE EVALUATION PROCEDURES

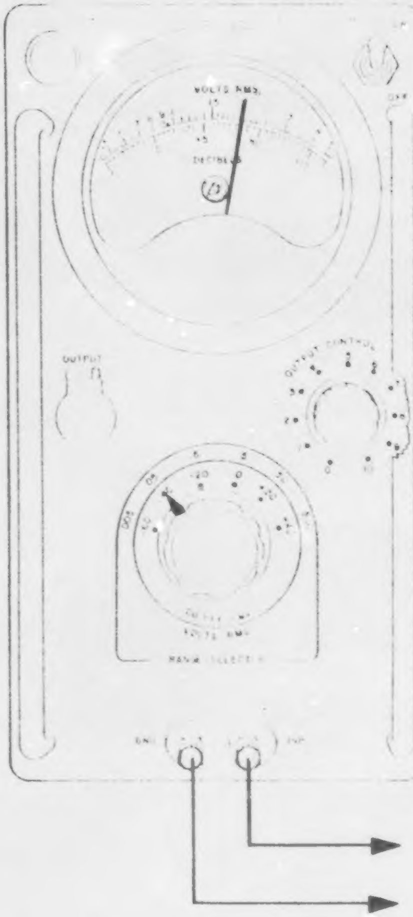
a. Have the technician demonstrate that the Transmitter Synchro TX-302 alignment is within tolerance limits.

b. This is done as follows:

- With VTVM leads connected to pins 3 & 4 of J-301 test jig and main cam on zero, technician rotates TX-302 slightly CW and then CCW.
- VTVM needle will rise when TX-302 is turned in either direction, if it has been properly aligned. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


VOLTS RMS
DECIBELS
OFF
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
INP

To terminals 3 & 4
of Jig J-301

AL-9

POST-TEST RECOVERY

a. Have the technician secure the set screws holding TX-302.

b. If technician successfully accomplished the alignment, recovery is completed.

c. If technician was unable to perform the alignment, return TX-302 to its original position.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

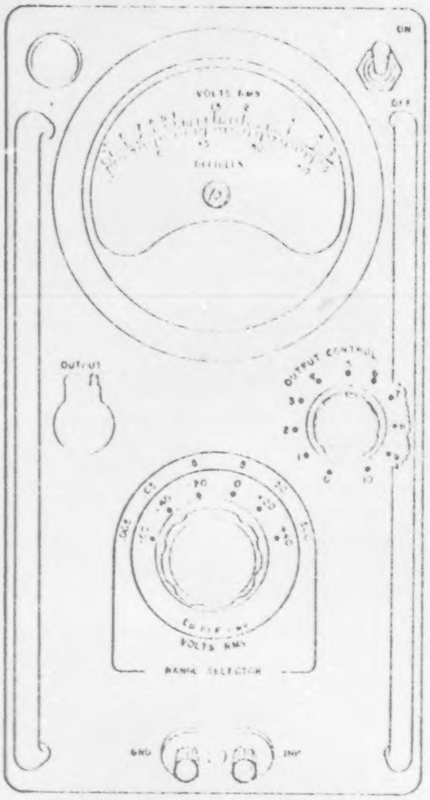
AL-10, Zeroing Transmitter Synchro TX-301

TIME ALLOTED

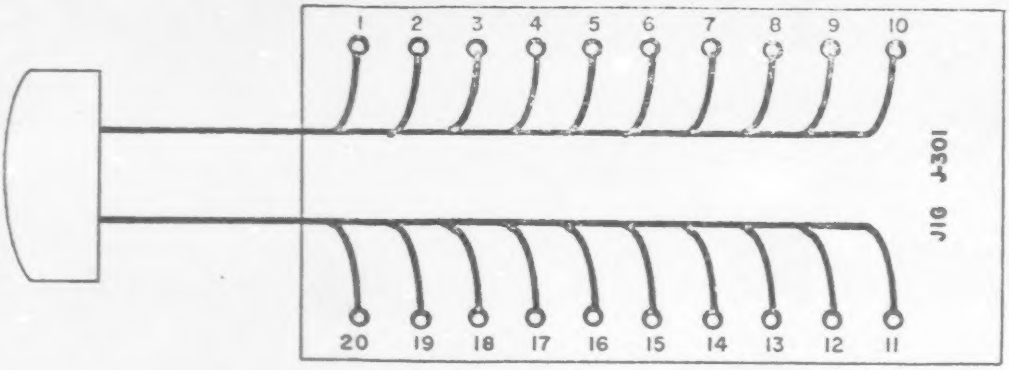
30 minutes

SUPPORT MATERIALS REQUIRED

a. Computer Bench Test set-up as described in Section A, Part VII
b. T. O. 5N1-3-8-2 or Applicable Technical Data
c. Electronic Voltmeter (1), ME-26 or equivalent
d. J-301 Test Jig (2)
e. Blade type Screw driver
f. Insulated Alligator and Banana Plug Shorting Leads


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR
GND
INP

(1)


JIG J-301

(2)

PRE-TEST SET-UP

a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.

b. If the set is not functioning properly, request one that is, or request assistance from local support to correct the problem.

c. If the set is functioning properly, proceed with the Pre-test set-up.

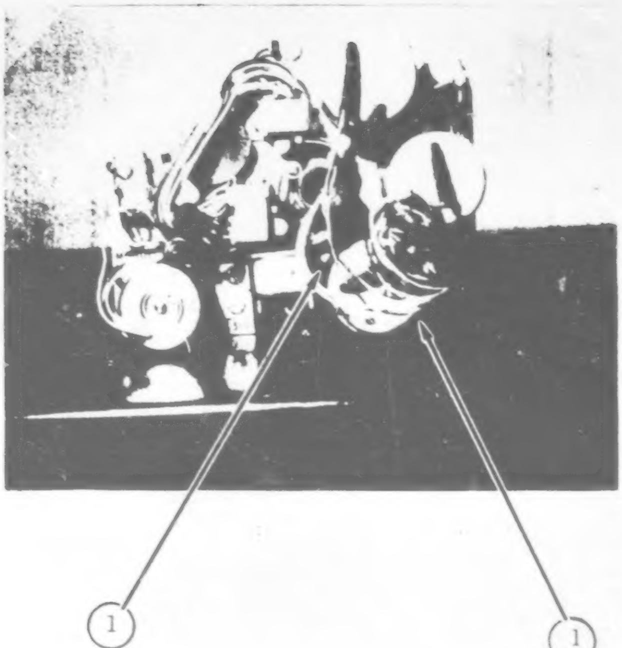
d. Locate TX-301. It is located on the computer as shown on opposite page. Note its position.

e. Loosen the two set screws (1) that hold TX-301 in position.

f. Rotate TX-301 forty-five degrees (45°) counter-clockwise (CCW).

g. Tighten the two set screws (1).

h. Review the technician's Test Instructions to familiarize yourself with them.


1
1

AL-10

TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on the Performance Evaluation Sheet.

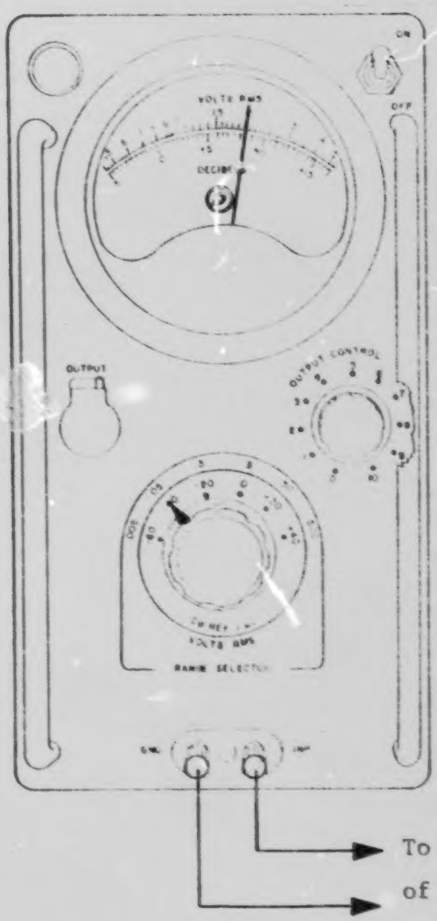
b. Note the time and have the technician begin the test.

c. When the technician completes his bench set-up for performing the alignment, he will ask you to check it.

d. Check the technician's bench set-up for safety hazards such as:

1. ungrounded test or prime equipment
2. uninsulated wires or connections
3. improper connections. (See opposite page for correct bench set-up for this alignment.)

e. Have the technician correct any un-safe conditions before applying power. DO NOT, however, correct errors that are not un-safe. (For example, wrong test equipment.)


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
VOLTS RMS
RANGE SELECTOR

To terminals 6 & 7
of Jig J-301

f. When you are satisfied that the bench set-up is safe, have the technician continue the test.

g. Stop the test when time has elapsed or the technician indicates that he has completed the alignment.

PERFROMANCE EVALUATION PROCEDURES

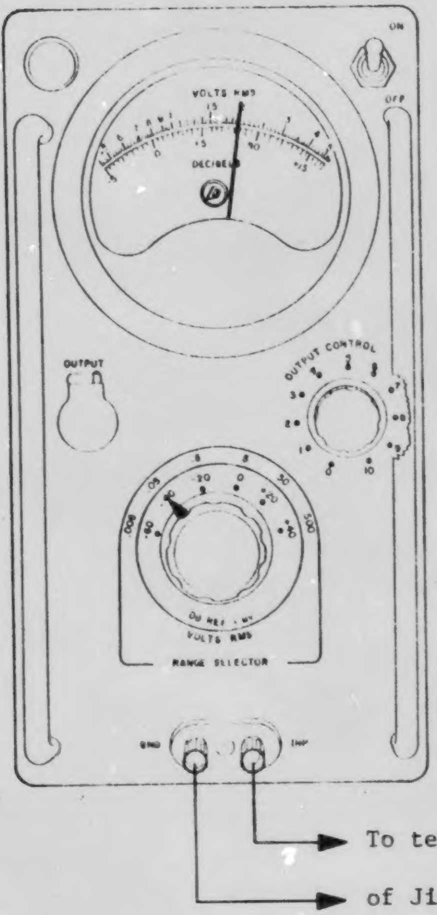
a. Have the technician demonstrate that the Transmitter Synchro TX-301 alignment is within tolerance limits.

b. This is done as follows:

- With VTVM leads connected to pins 6 & 7 of J-301 test jig and main cam on zero, technician rotates TX-301 slightly CW and then CCW.
- VTVM needle will rise when TX-301 is turned in either direction, if it has been properly aligned. (See opposite page.)

c. Have technician complete question I on Performance Evaluation Sheet.

d. Collect sheets and mark question II.


ON
OFF
VOLTS RMS
DECIBELS
OUTPUT
OUTPUT CONTROL
DB REF 1 MV
VOLTS RMS
RANGE SELECTOR
GND
INP

To terminals 6 & 7

of Jig J-301

POST-TEST RECOVERY

a. Have the technician secure the set screws holding TX-301.

b. If technician successfully accomplished the alignment, recovery is completed.

c. If technician was unable to perform the alignment, return TX-301 to its original position.

d. Perform operational checkout to determine if set is still functioning properly.

e. If set is still not functioning properly, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-1, Frequency Tracker Power Supply Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

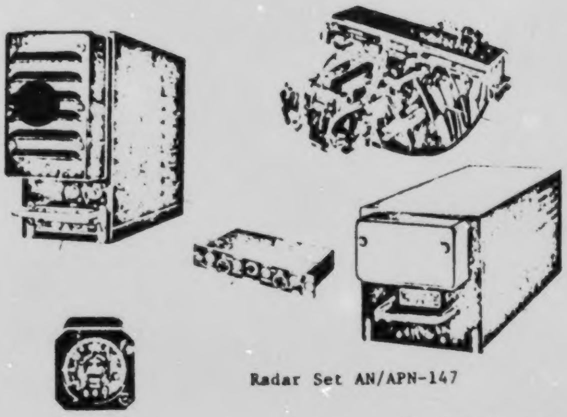
b. Test Equipment, to be available upon request. (See opposite page.)

c. Hand Tools

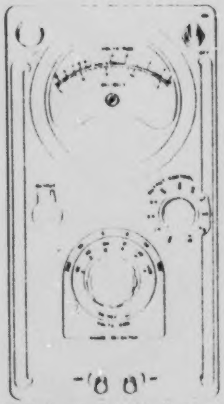
d. Defective 6080WA Tube

PRE-TEST SET-UP

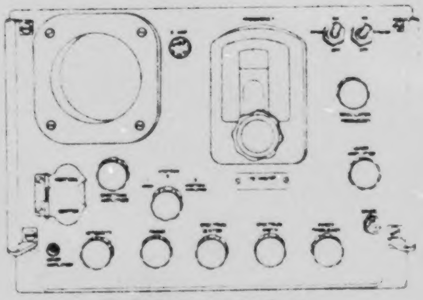
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.



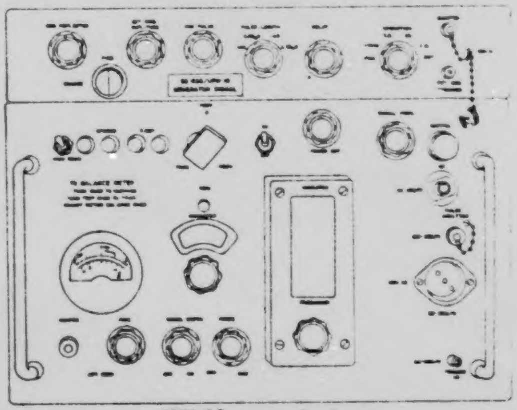
Radar Set AN/APN-147



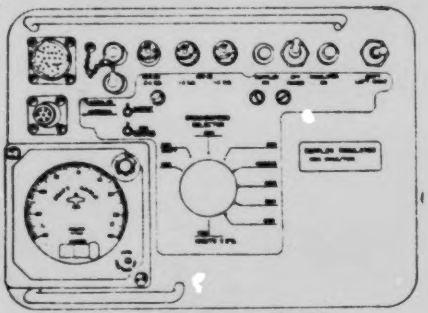
ME-6 or equivalent



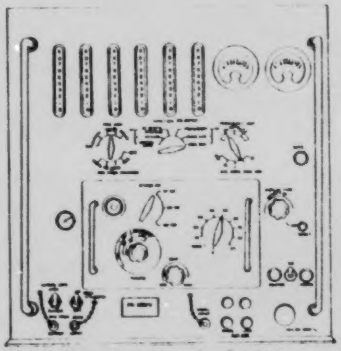
TS-148 or equivalent



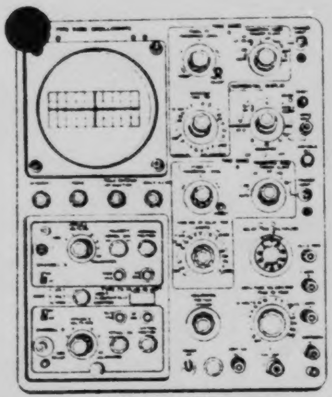
UPM-10 or equivalent



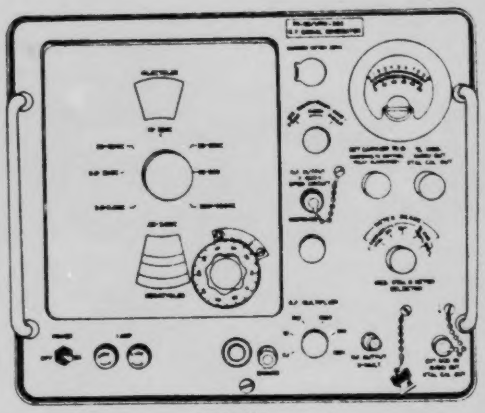
Doppler Simulator, CMA-544



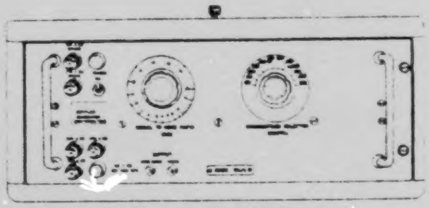
USM-26 or equivalent



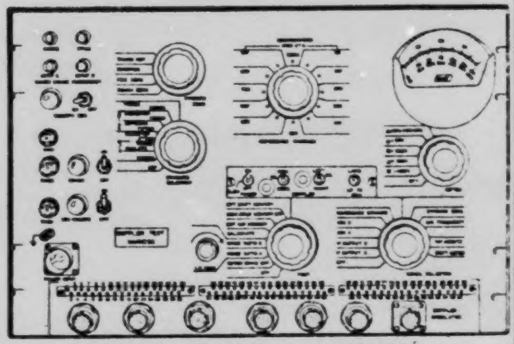
545B Oscilloscope



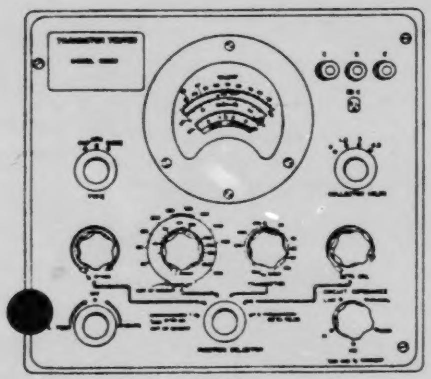
URM-25D



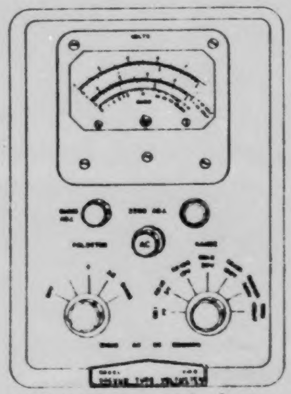
Doppler Generator CMA-546



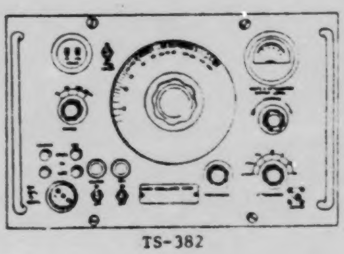
Doppler Test Harness CMA-543



1890M



410B VTVM or equivalent



TS-382

b. Remove operative V-7207 (tube 6080WA) from Frequency Tracker Power Supply (see opposite page).

c. Install the defective 6080WA tube in V-7207.

d. Review the technician's Test Instructions to familiarize yourself with them.

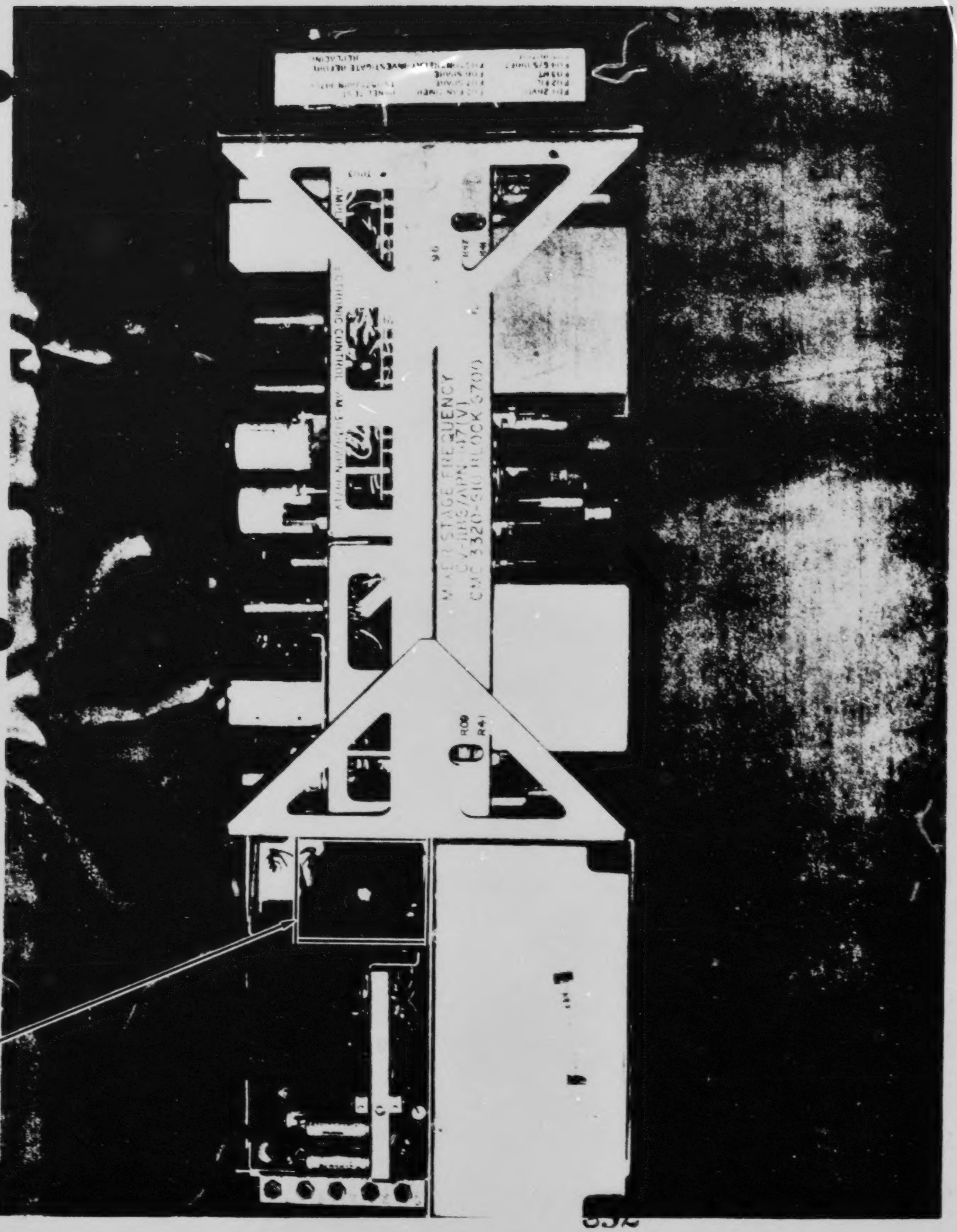
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


MIXER STAGE FREQUENCY
CMC 3320-510 BLOCK 5700
R09
R41
R47

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

TS-1

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational check-out to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good tube (see page 421).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-2, Modulator Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Test Equipment, to be available upon request. (See opposite page.)

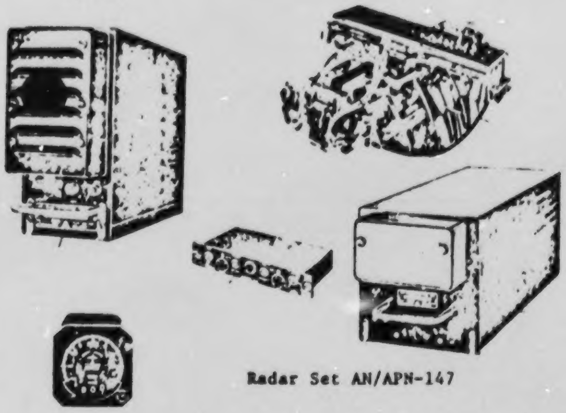
c. Hand Tools

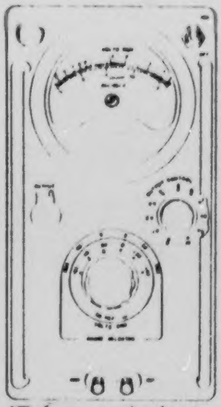
d. Defective L-8101 on Spare Modulator Module

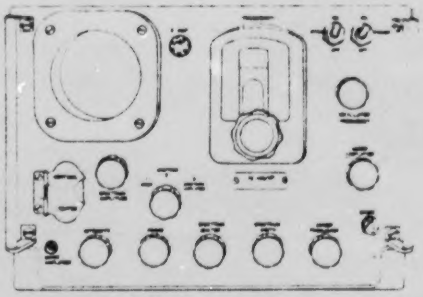
PRE-TEST SET-UP

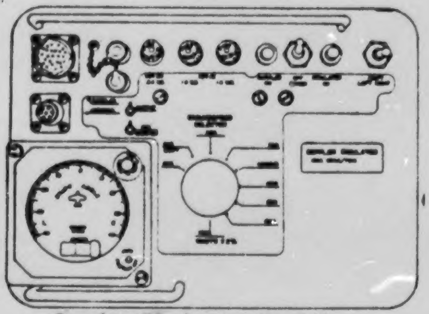
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

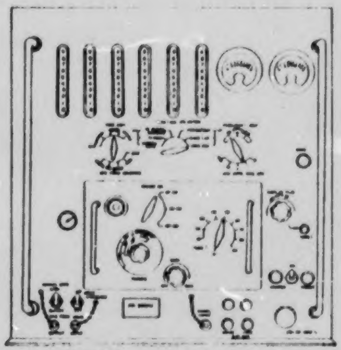
TS-2

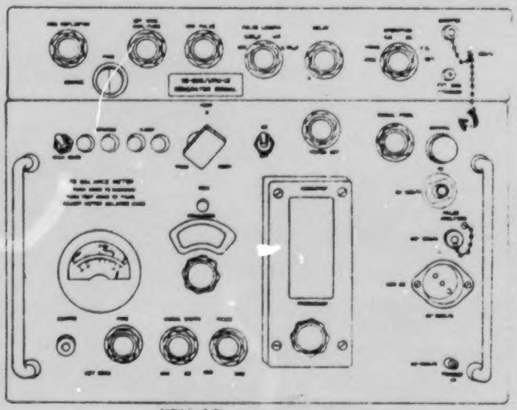

Radar Set AN/APN-147

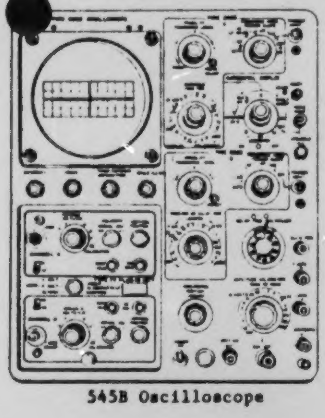

ME-6 or equivalent

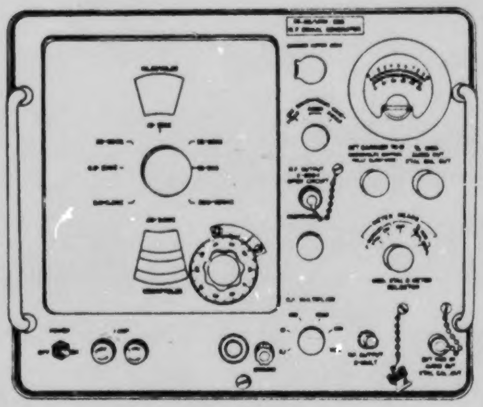

TS-148 or equivalent

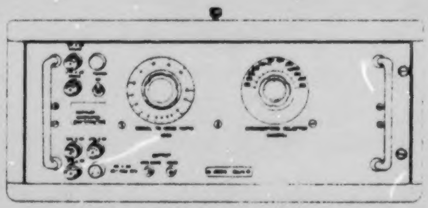

Doppler Simulator, CMA-544

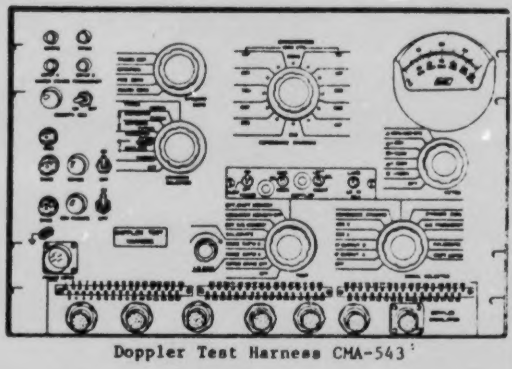

USM-26 or equivalent

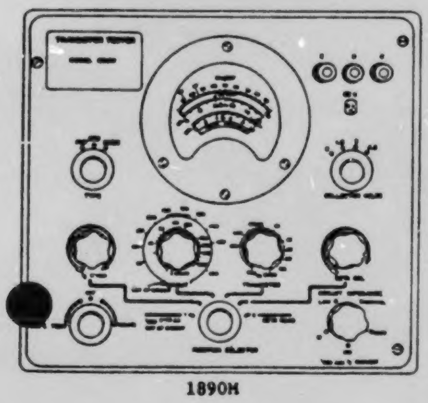

UPM-10 or equivalent

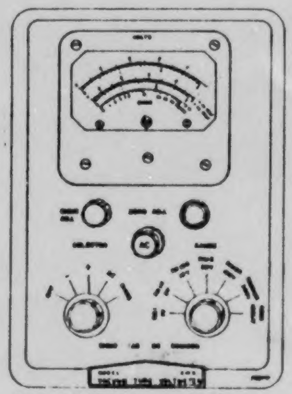

545B Oscilloscope

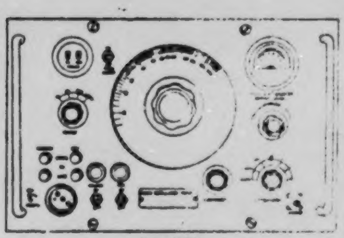

URM-25D


Doppler Generator CMA-546


Doppler Test Harness CMA-543


1890M


410B VTVM or equivalent


TS-382

b. Remove Operative Modulator Module from the Receiver-Transmitter (opposite page).

c. Install the defective Modulator in the Receiver-Transmitter.

d. Review the technician's Test Instructions to familiarize yourself with them.

TEST ADMINISTRATION PROCEDURES

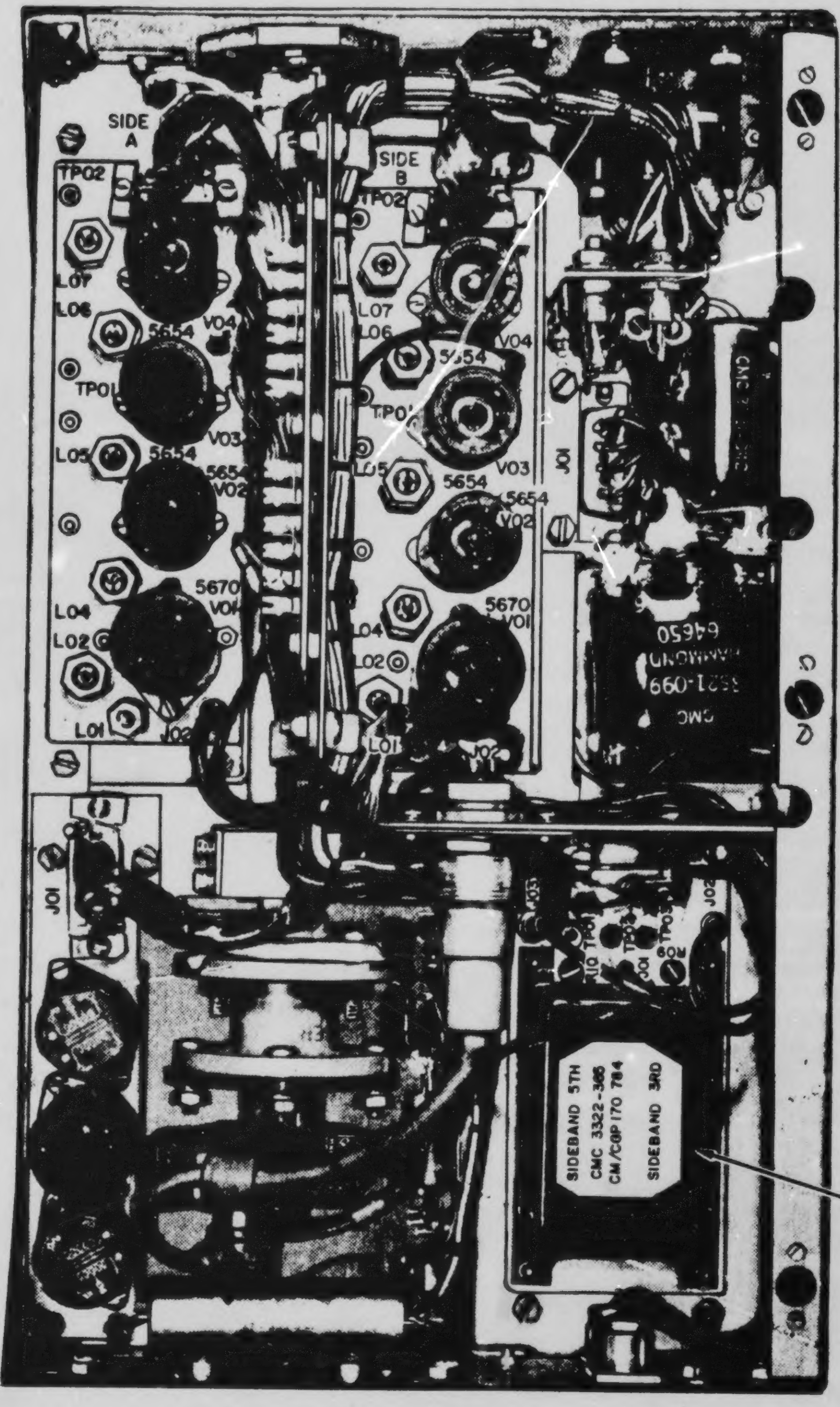
a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.

TS-2


SIDE A
SIDE B
TP02
L07
L06
5654
V04
TP01
L05
V03
5654
V02
5670
V01
L04
L02
L01
J02
J01
CMC 3521-099
HAMMOND
64650
SIDEBAND 5TH
CMC 3322-365
CM/CGP 170 784
SIDEBAND 3RD

TS-2

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

   1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

      OR

   2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

TS-2

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational checkout to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good module (see page 429).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-3, IF-Amplifier Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Test Equipment, to be available upon request. (See opposite page.)

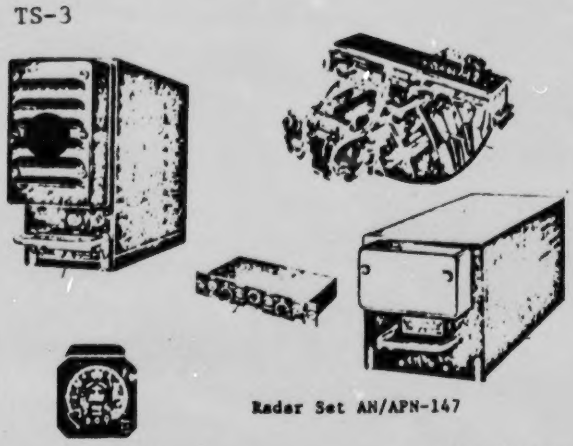
c. Hand Tools

d. Defective 5670 Tube

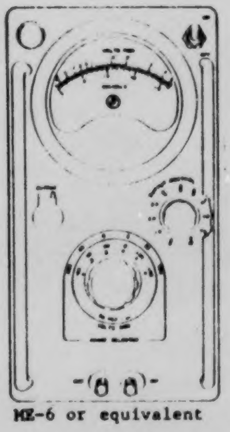
PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

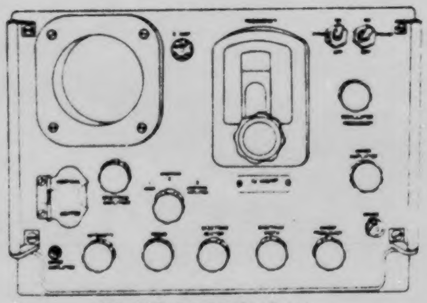
TS-3



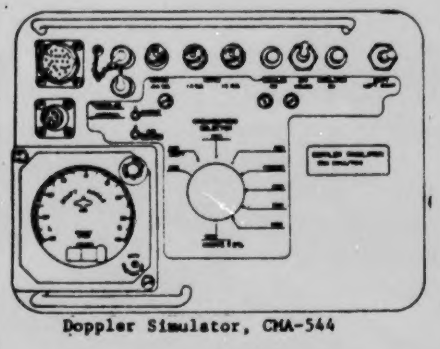
Radar Set AN/APN-147



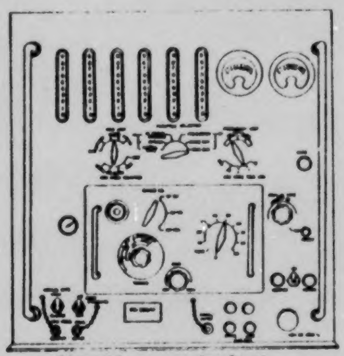
ME-6 or equivalent



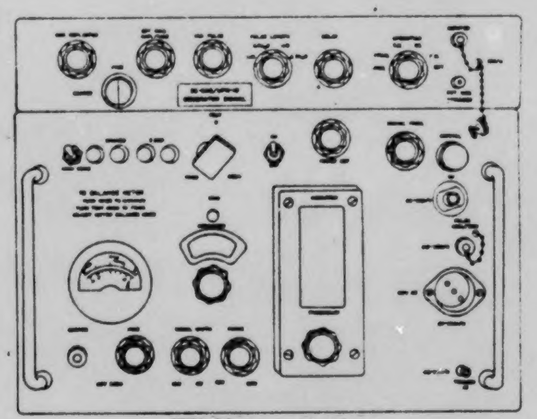
TS-148 or equivalent



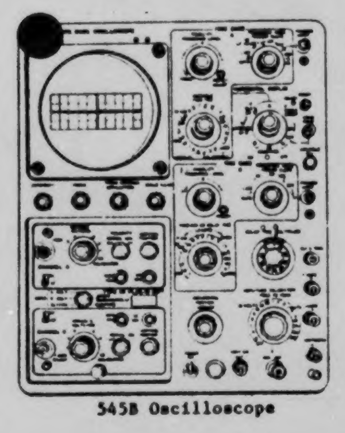
Doppler Simulator, CMA-544



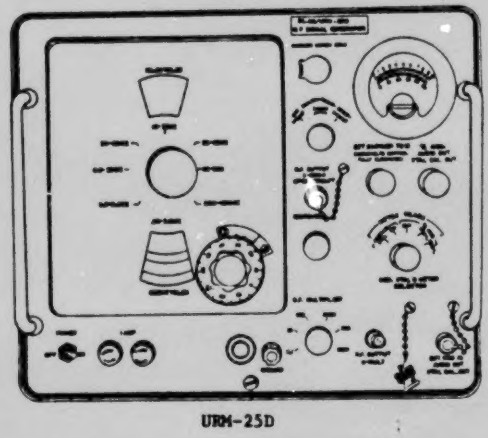
USM-26 or equivalent



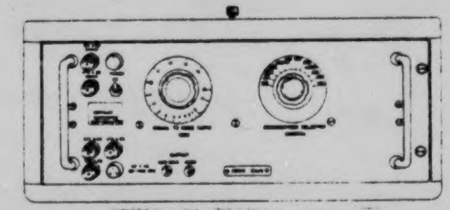
UPM-10 or equivalent



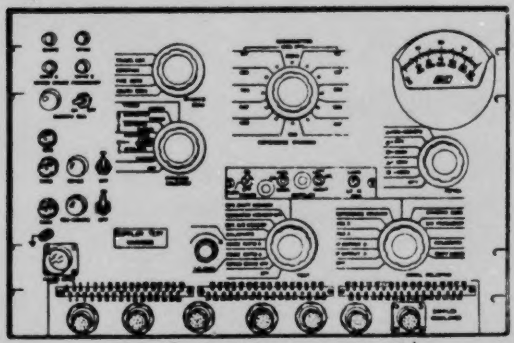
545B Oscilloscope



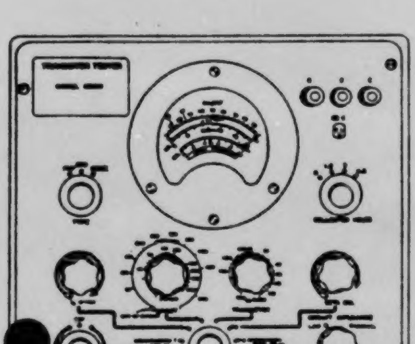
URM-25D



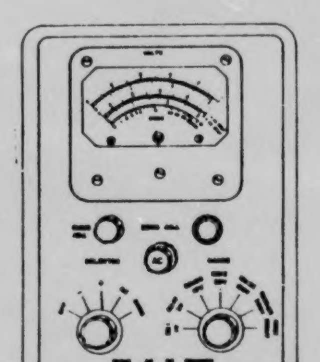
Doppler Generator CMA-546



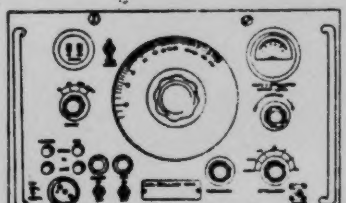
Doppler Test Harness CMA-543



1890M



410B VTVM or equivalent



TS-382

TS-3

b. Remove operative V-6401A (tube 5670) from the IF-Amplifier (opposite page).

c. Install the defective 5670 tube in V-6401A.

d. Review the technician's Test Instructions to familiarize yourself with them.

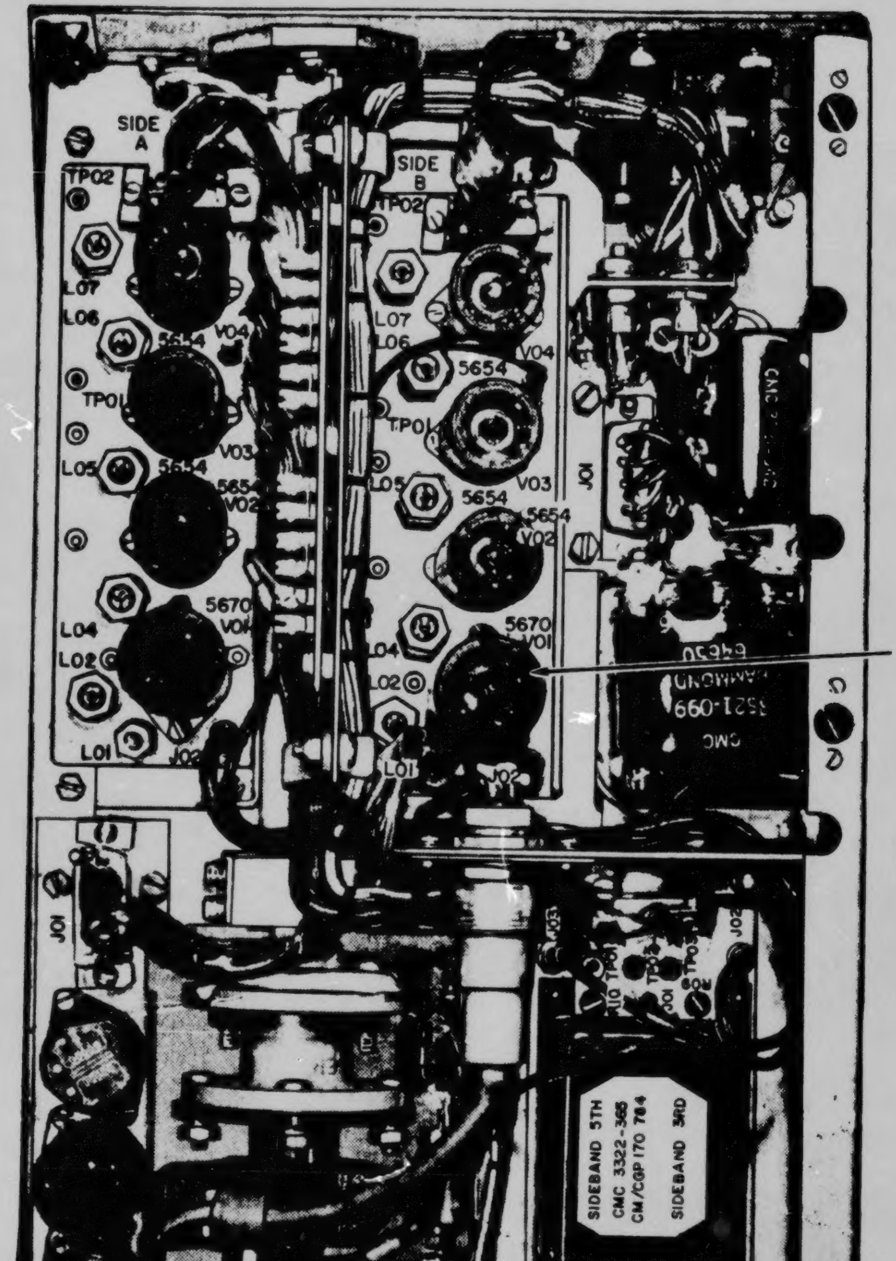
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


SIDE A
SIDE B
TP02
L07
L06
5654
V04
TP01
L05
5654
V03
5654
V02
5670
V01
L04
L02
L01
J02
J01
TP03
SIDEBAND 5TH
CMC 3322-365
CM/CGP 170 784
SIDEBAND 3RD
CMC
3521-099
HAMMOND
64650

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational check-out to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good tube (see page 437).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-4, IF-Amplifier Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Test Equipment, to be available upon request. (See opposite page.)

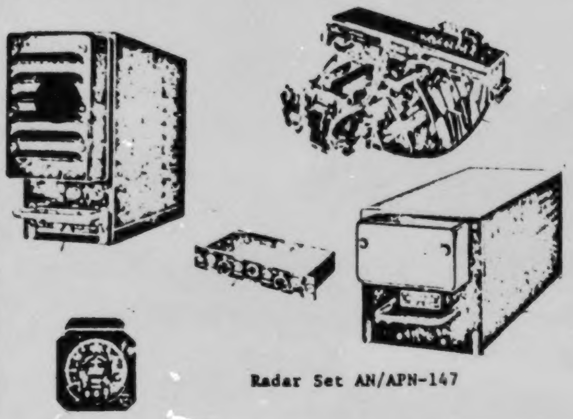
c. Hand Tools

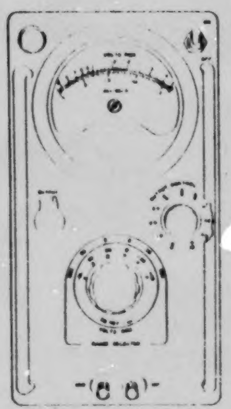
d. Defective Diode CR-6401 (IN277) on spare IF Amplifier Module

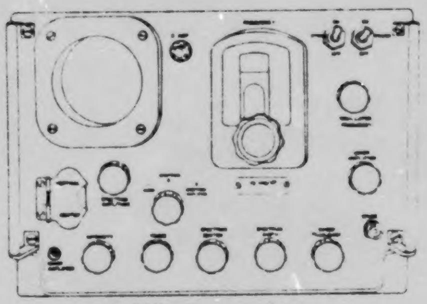
PRE-TEST SET-UP

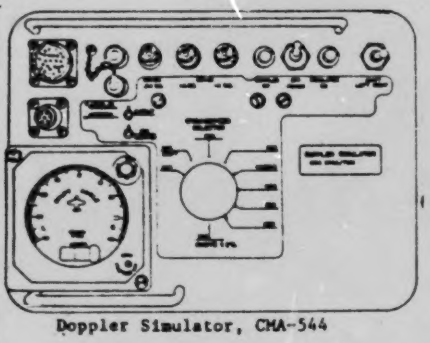
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

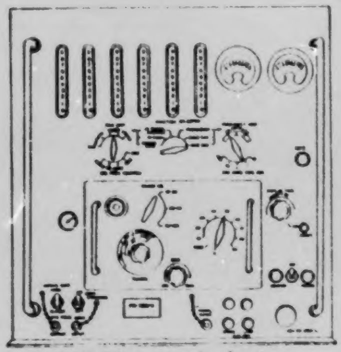
TS-4

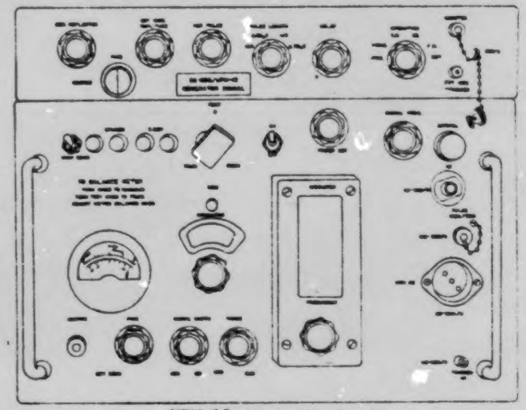

Radar Set AN/APN-147

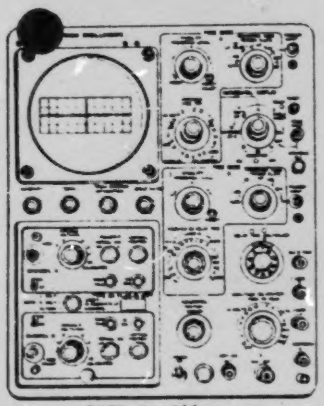

ME-6 or equivalent

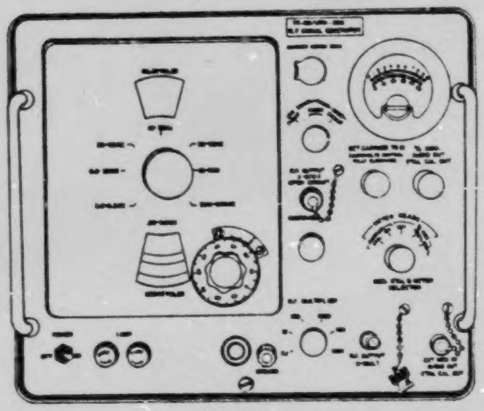

TS-148 or equivalent

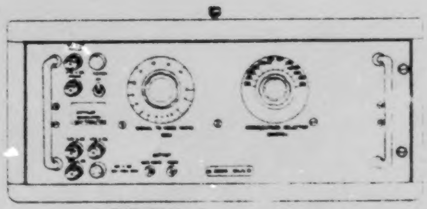

Doppler Simulator, CMA-544

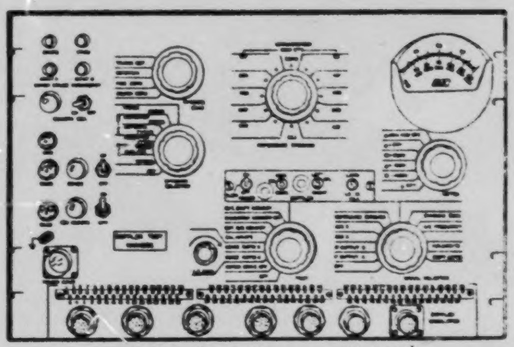

USM-26 or equivalent

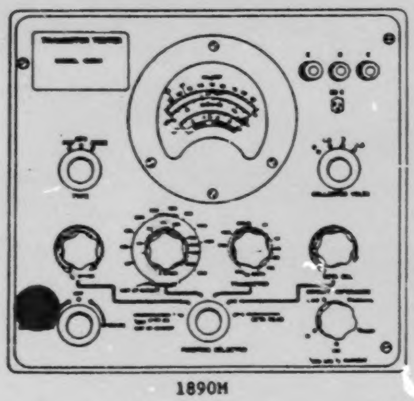

UPM-10 or equivalent

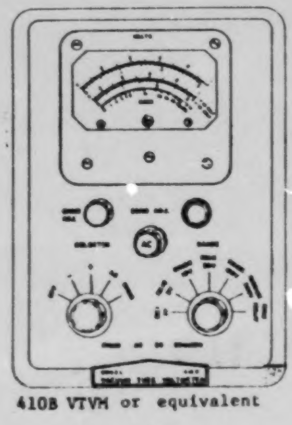

545B Oscilloscope

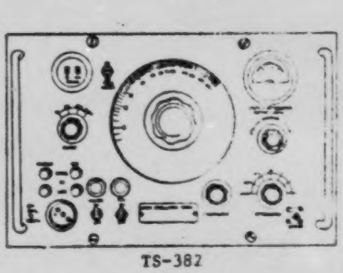

URM-25D


Doppler Generator CMA-546


Doppler Test Harness CMA-543


1890M


410B VTVM or equivalent


TS-382

b. Remove operative IF-Amplifier module from the Receiver-Transmitter (see opposite page).

c. Install the defective IF-Amplifier module in the Receiver-Transmitter.

d. Review the technician's Test Instructions to familiarize yourself with them.

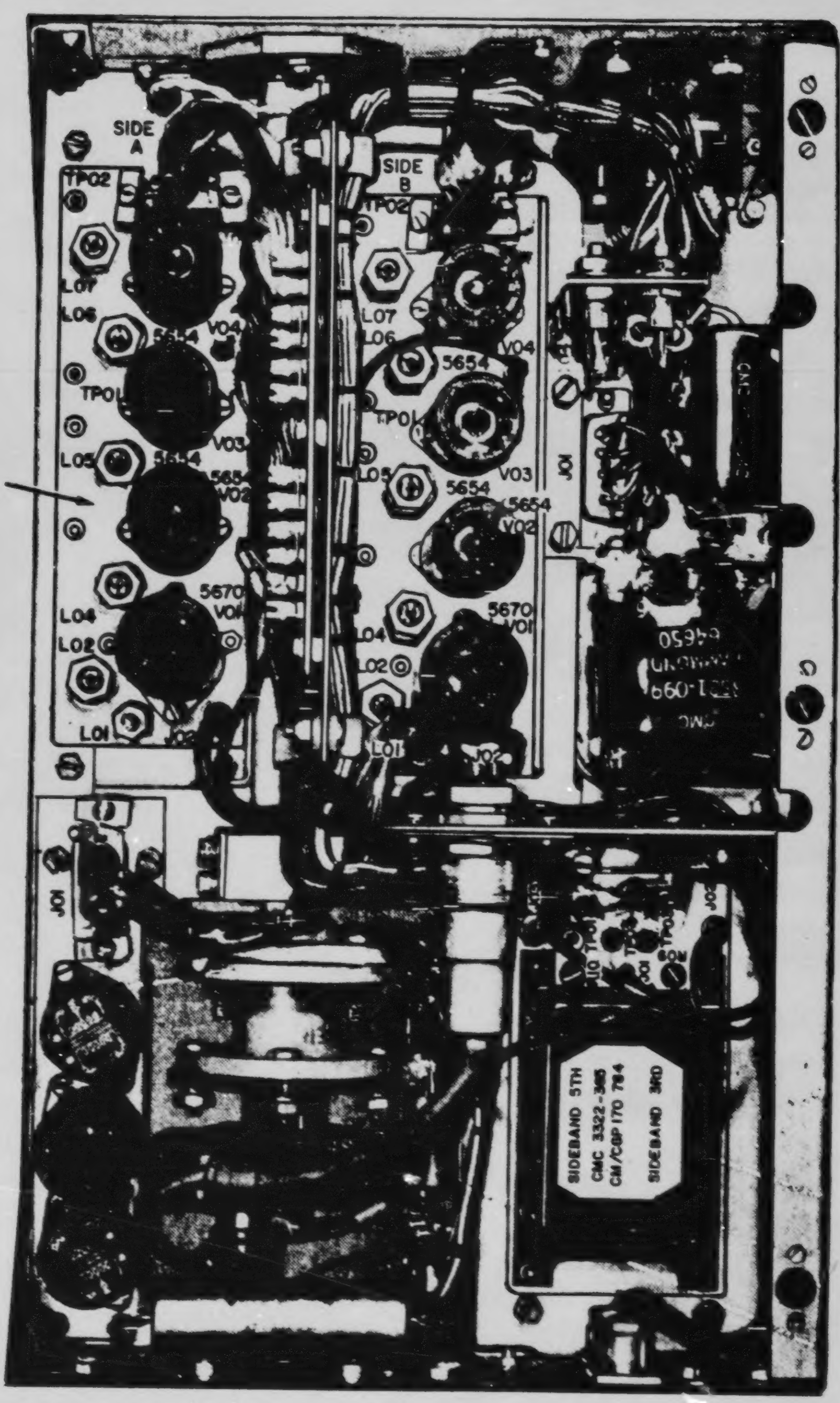
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


SIDE A
TP02
L07
L06
5654
V04
TP01
L05
5654
V03
5654
V02
5670
V01
L04
L02
L01
J02
SIDE B
TP02
L07
L06
5654
V04
TP01
L05
5654
V03
5654
V02
5670
V01
L04
L02
L01
J02
J01
J01
SIDEBAND 5TH
CMC 3322-365
CM/CSP 170 784
SIDEBAND 3RD

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

   1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

      OR

   2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

TS-4

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational checkout to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good module (see page 445).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-5, Electronic Control Amplifier Troubleshooting Frequency Tracker Power Supply

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Test Equipment, to be available upon request. (See opposite page.)

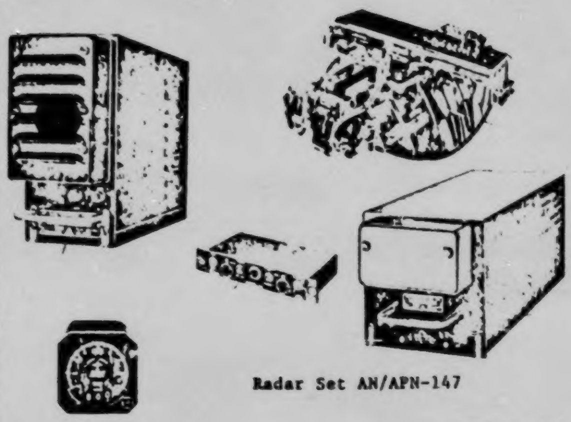
c. Hand Tools

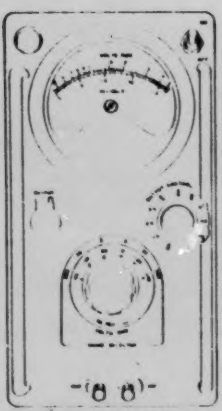
d. Defective 5670 Tube

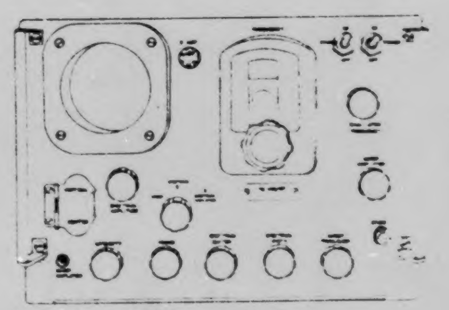
PRE-TEST SET-UP

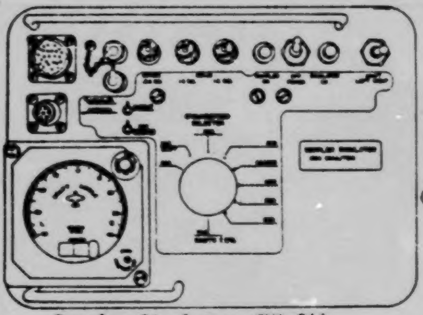
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

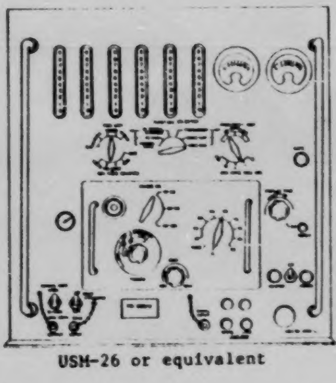
TS-5

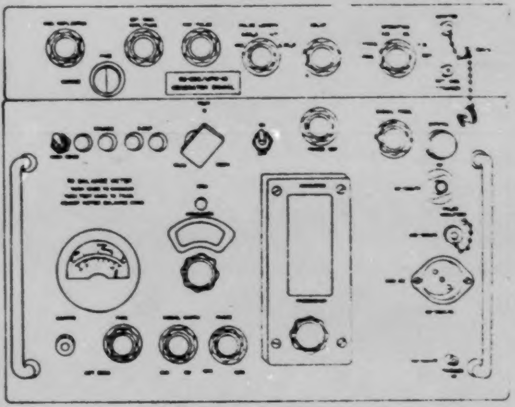

Radar Set AN/APN-147

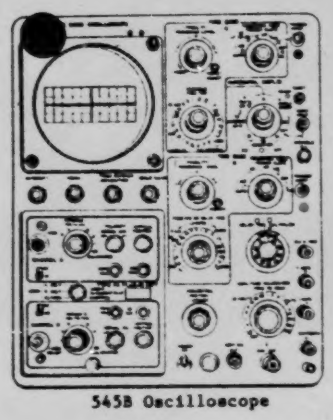

ME-6 or equivalent

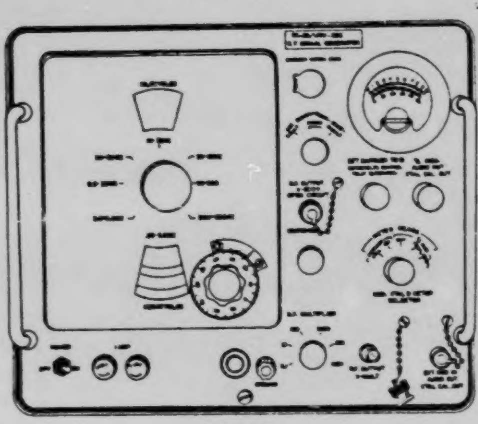

TS-148 or equivalent

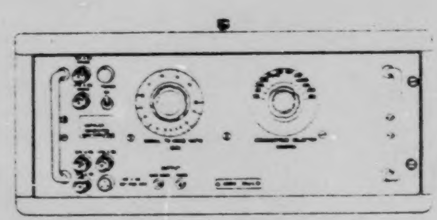

Doppler Simulator, CMA-544

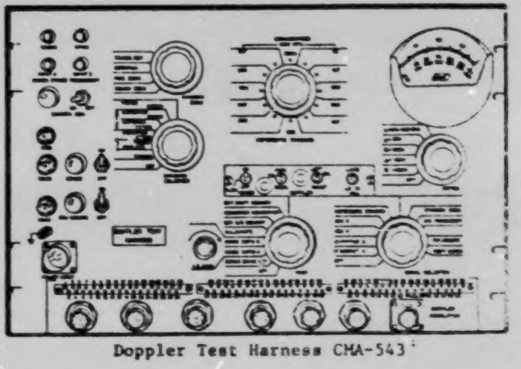

USM-26 or equivalent

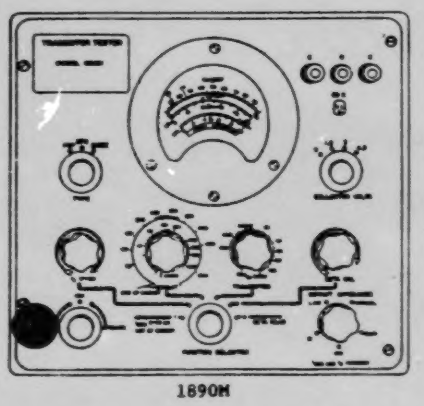

UPM-10 or equivalent

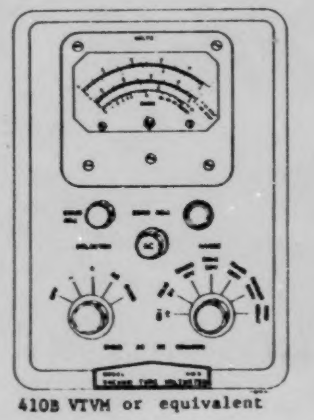

545B Oscilloscope

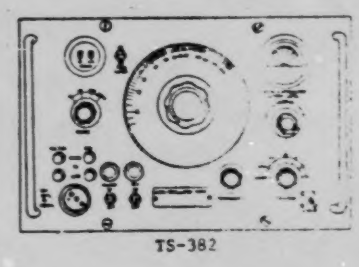

URM-25D


Doppler Generator CMA-546


Doppler Test Harness CMA-543


1890M


410B VTVM or equivalent


TS-382

TS-5

b. Remover operative V-7901 (tube 5670) from the Electronic Control Amplifier (see opposite page).

c. Install the defective 5670 tube in V-7901.

d. Review the technician's Test Instructions to familiarize yourself with them.

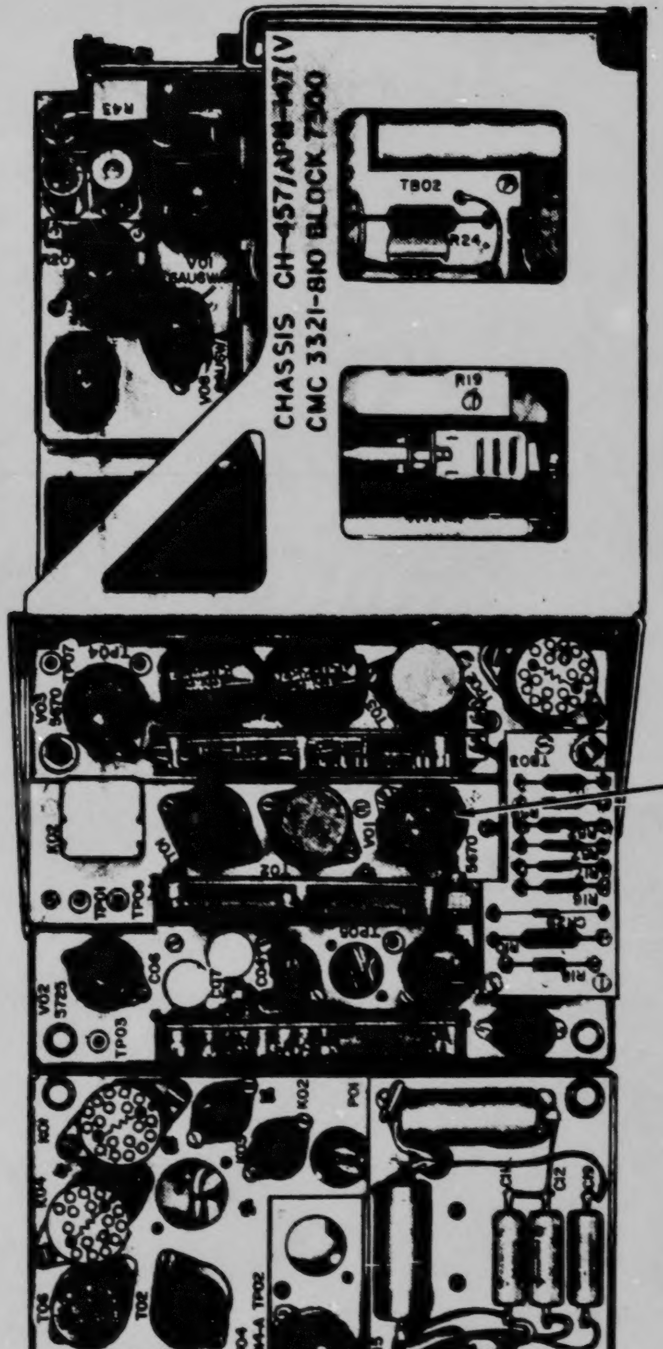
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


CHASSIS CH-457/APN-147(V)
CMC 3321-810 BLOCK 7300
TB02
R24
R19
R43
V01
V03
V02 5725
TP01
TP02
TP03
TP04
TP05
V04 5814-A
V03 5814-A
V02 5670
TB01
T01
T02
T03
T04
T05
K01
K02
C11
C12
C15
R16

420

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational checkout to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good tube (see page 453).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-6, Electronic Control Amplifier Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Test Equipment, to be available upon request. (See opposite page.)

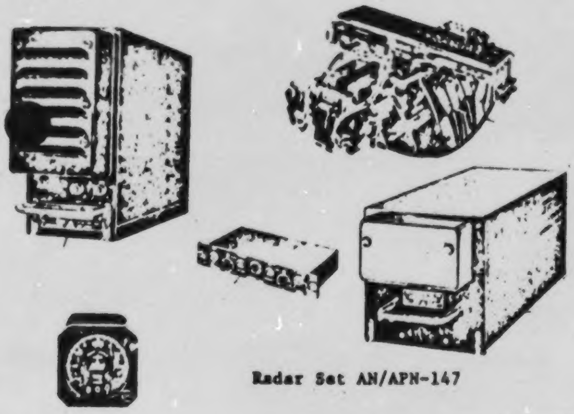
c. Hand Tools

d. Defective Diode CR-7901 (IN756) on spare Electronic Control Amplifier

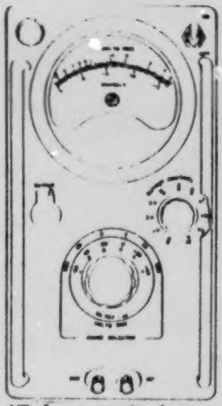
PRE-TEST SET-UP

a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

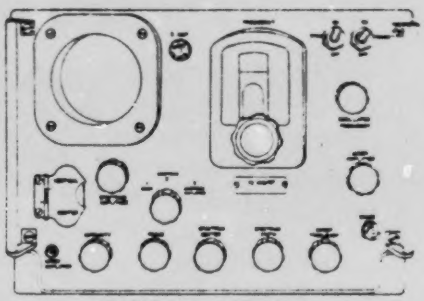
TS-6



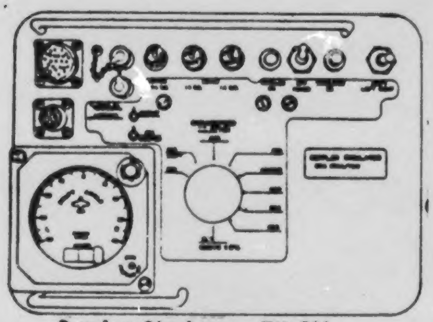
Radar Set AN/APN-147



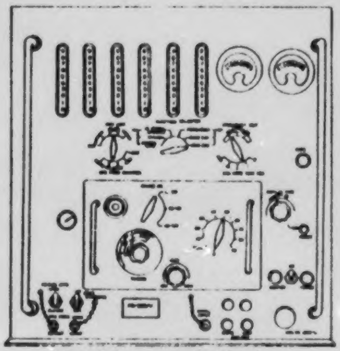
ME-6 or equivalent



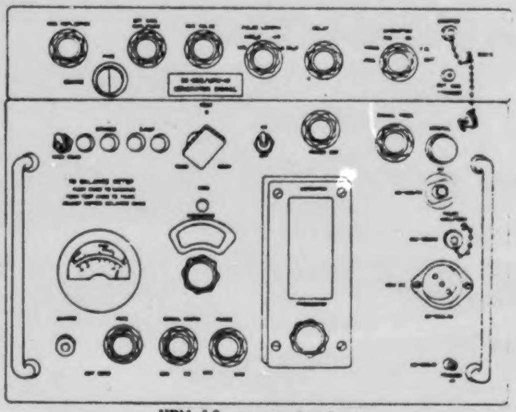
TS-148 or equivalent



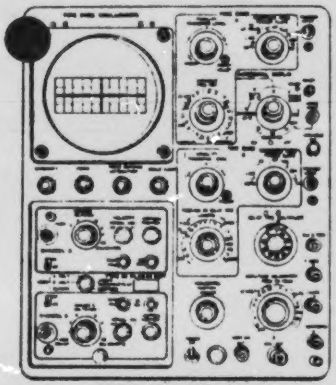
Doppler Simulator, CMA-544



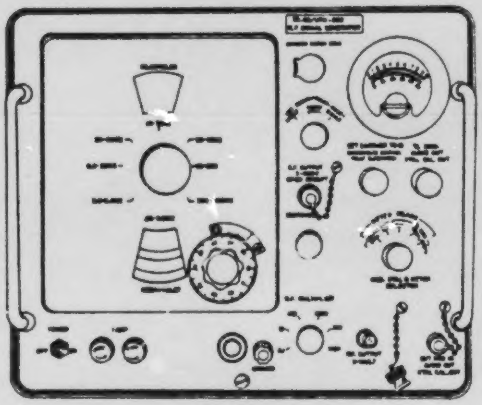
USM-26 or equivalent



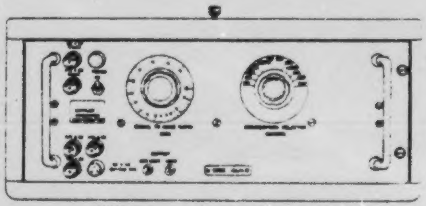
UPM-10 or equivalent



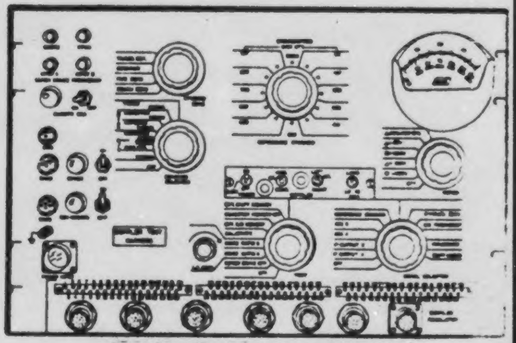
545B Oscilloscope



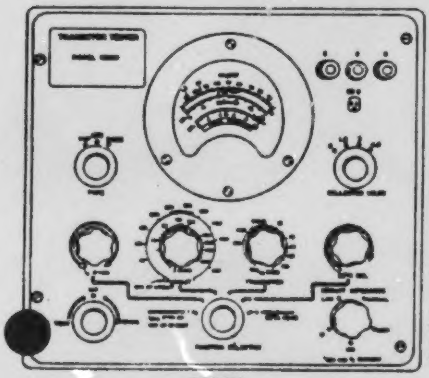
URM-25D



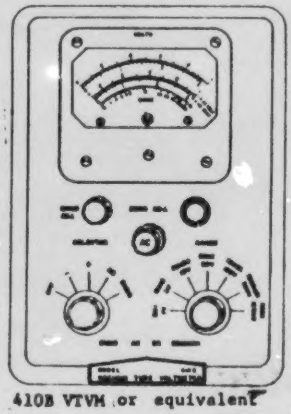
Doppler Generator CMA-546



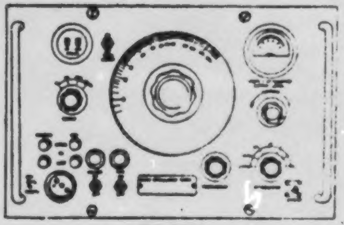
Doppler Test Harness CMA-543



1890M



410B VTVM or equivalent



TS-382

b. Remove operative Electronic Control Amplifier module from the Frequency Tracker (see opposite page).

c. Install the defective Electronic Control Amplifier module in the Frequency Tracker.

d. Review the technician's Test Instructions to familiarize yourself with them.

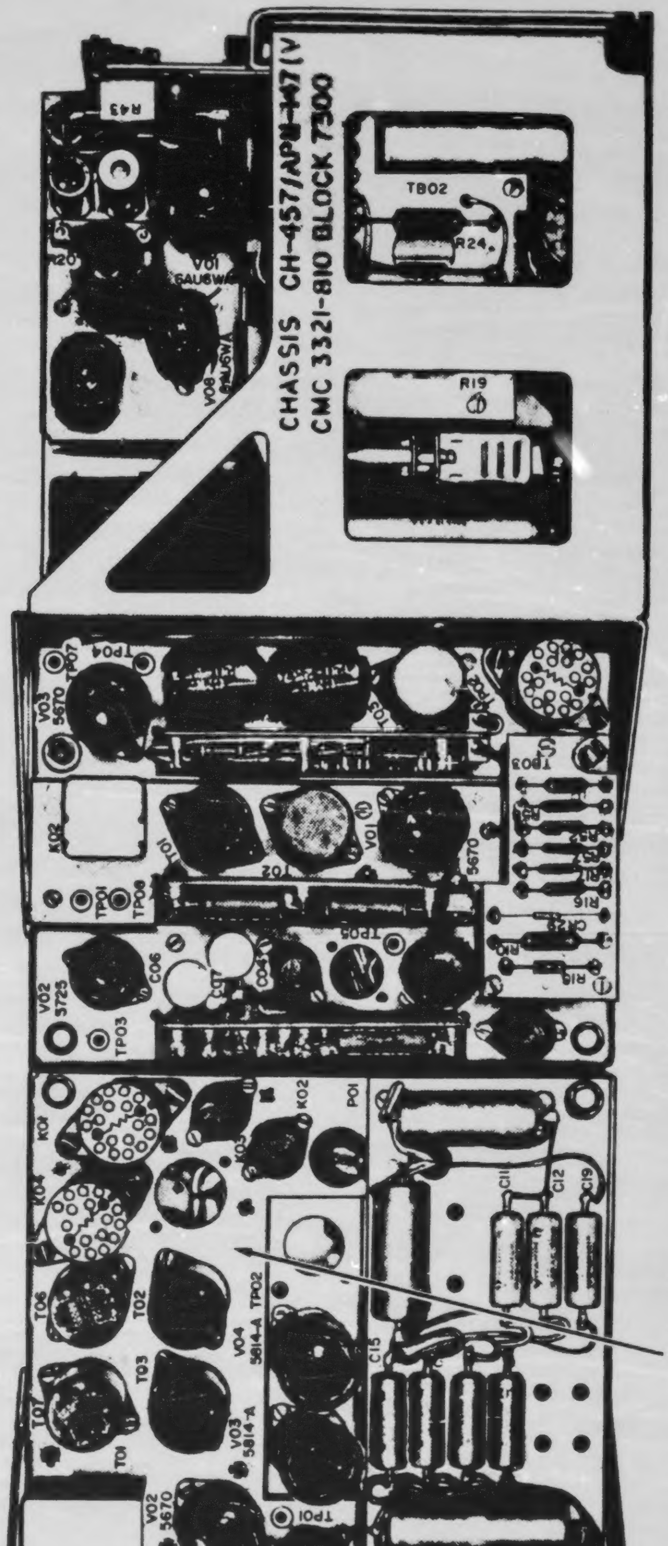
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


CHASSIS CH-457/APN-~~147~~(V)
CMC 3321-810 BLOCK 7300
R43
TB02
R24
R19
V01 6AU6WA
V08 6AU6WA
V03 5670
TP04
TP07
V01
5670
K02
T01
T02
TP01
TP08
TP03
V02 5725
C06
TP05
K01
K03
K04
P01
C11
C12
C19
C15
T06
T03
T01
V04 5814-A
TP02
V03 5814-A
V02 5670
TP01
R29
R32
R36

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

   1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

      OR

   2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

TS-6

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational checkout to insure proper equipment functioning.

TS-6

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good module (see page 461).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-7, Signal Comparator Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

b. Test Equipment, to be available upon request. (See opposite page.)

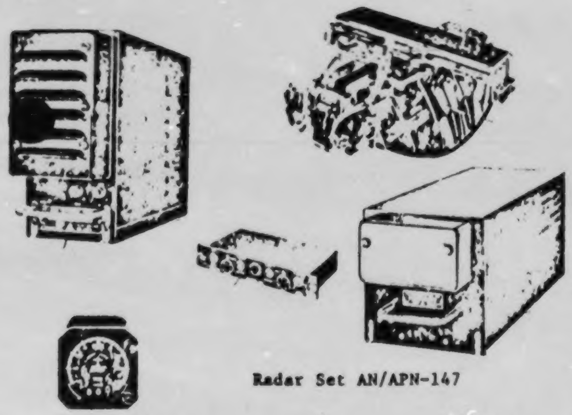
c. Hand Tools

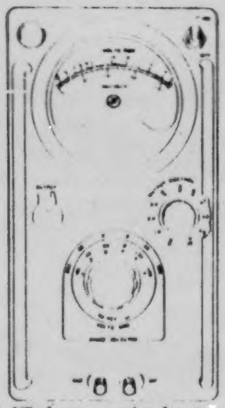
d. Defective Capacitor C-6814 on spare Signal Comparator module

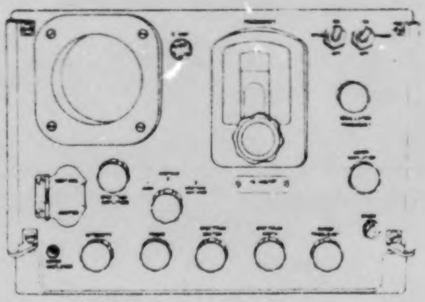
PRE-TEST SET-UP

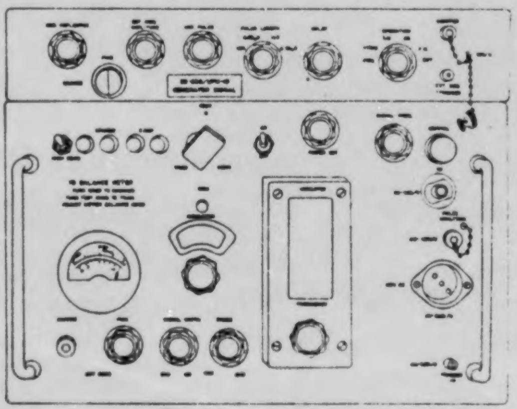
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

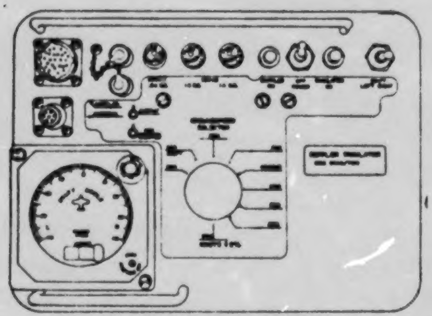
TS-7

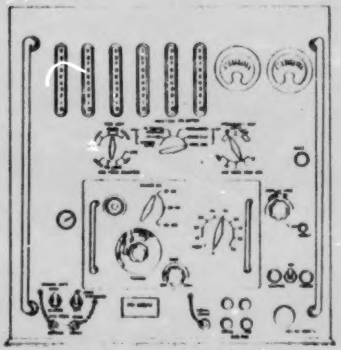

Radar Set AN/APN-147

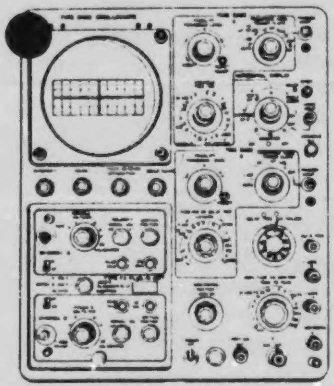

ME-6 or equivalent

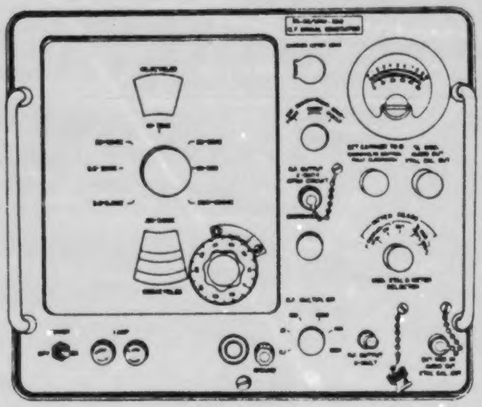

TS-148 or equivalent

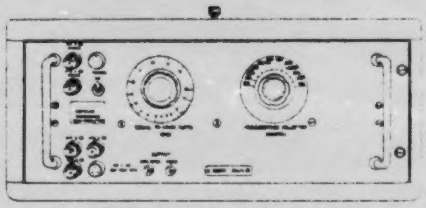

UPM-10 or equivalent

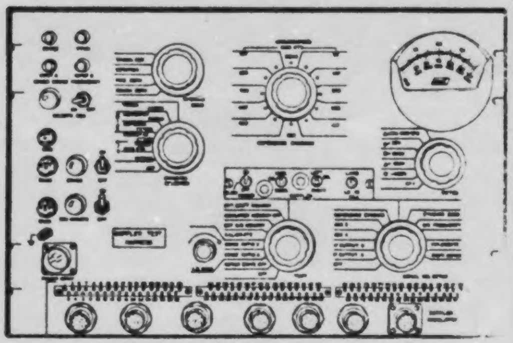

Doppler Simulator, CMA-544

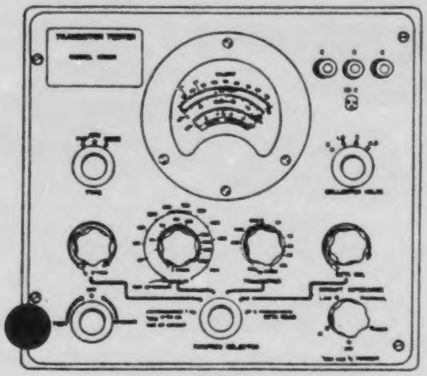

USM-26 or equivalent

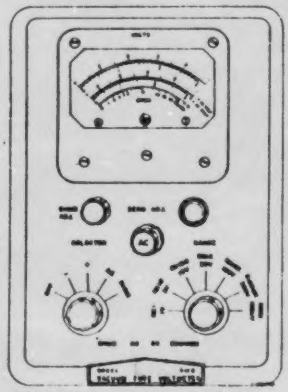

545B Oscilloscope

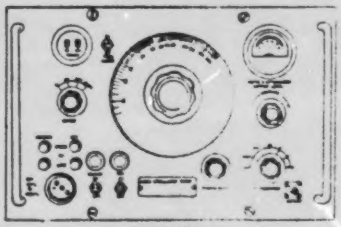

URM-25D


Doppler Generator CMA-546


Doppler Test Harness CMA-543


1890M


410B VTVM or equivalent


TS-382

b. Remove operative Signal Comparator module from Frequency Tracker (see opposite page).

c. Install the Signal Comparator with the defective capacitor C-6814 in the Frequency Tracker.

d. Review the technician's Test Instructions to familiarize yourself with them.

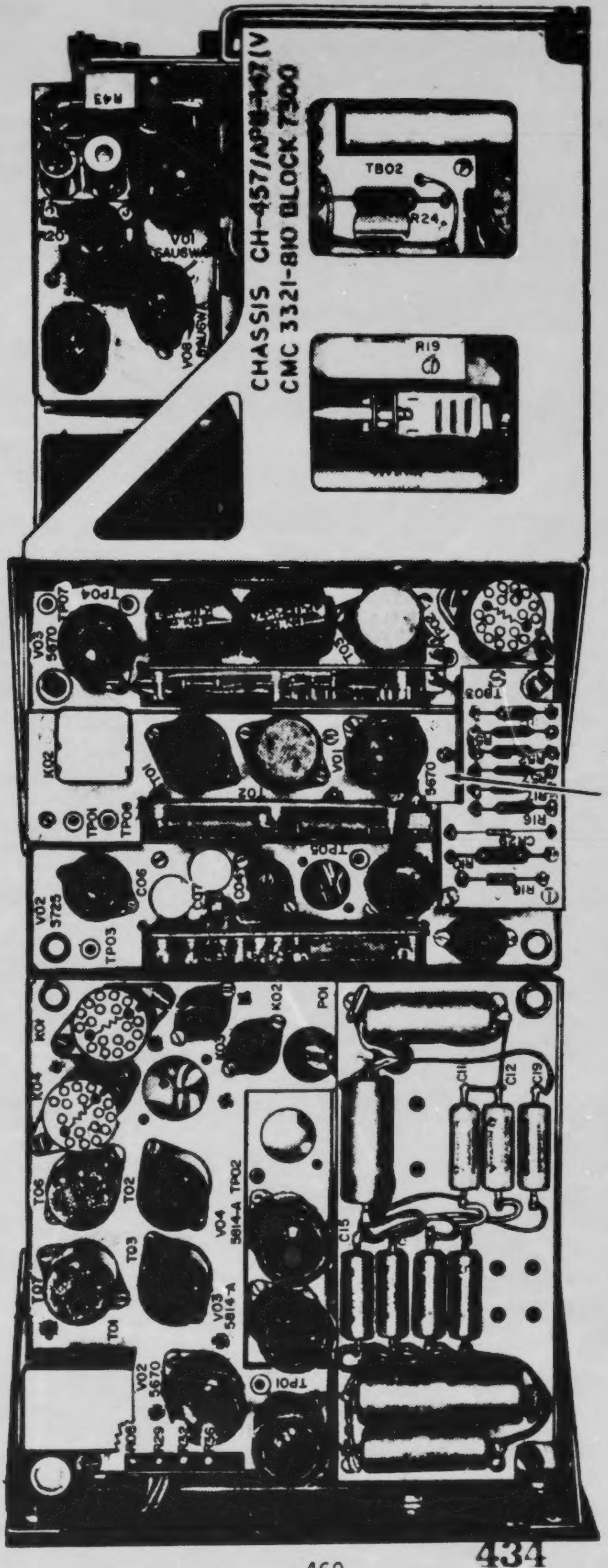
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


CHASSIS CH-457/APN-147(V)
CMC 3321-810 BLOCK 7300
R43
TB02
R24
R19
V01
V08
TP04
TP07
V03 5670
T03
K02
TP01
TP06
T01
T02
V01 5670
TP05
C06
V02 5725
TP03
R16
R18
TP08
K01
K02
K03
K04
P01
T06
T02
T03
T07
V04 5814-A
TP02
V03 5814-A
T01
V02 5670
TP01
C11
C12
C19
C15
R29
R32
R36

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational check-out to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good module (see page 469).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-8, Signal Comparator Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

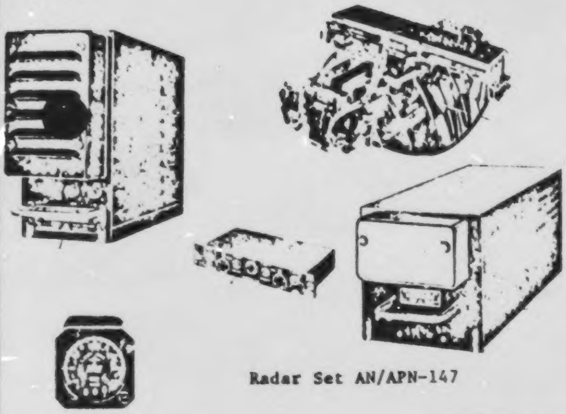
b. Test Equipment, to be available upon request. (See opposite page.)

c. Hand Tools

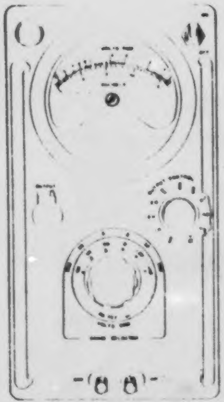
d. Defective resistor R-6821 on spare Signal Comparator module

PRE-TEST SET-UP

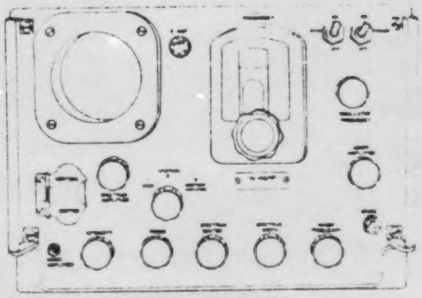
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.



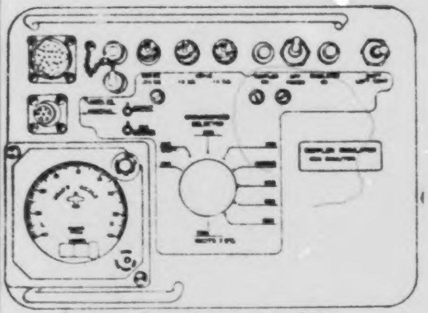
Radar Set AN/APN-147



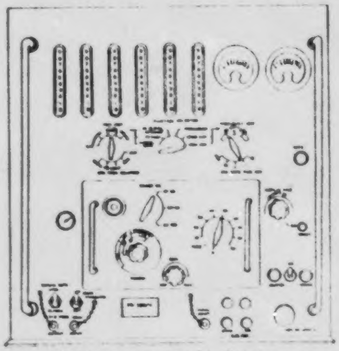
ME-6 or equivalent



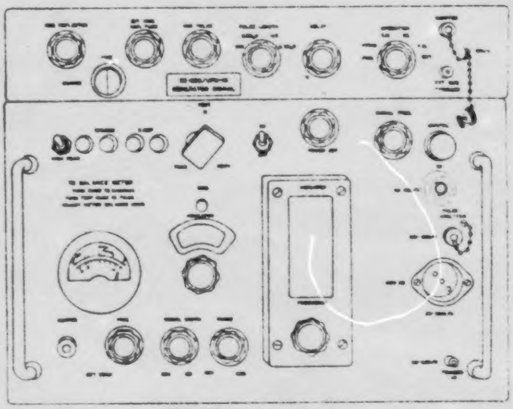
TS-148 or equivalent



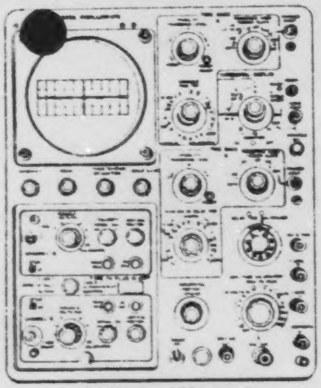
Doppler Simulator, CMA-544



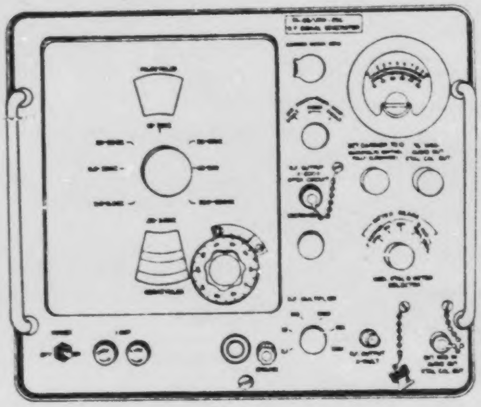
USM-26 or equivalent



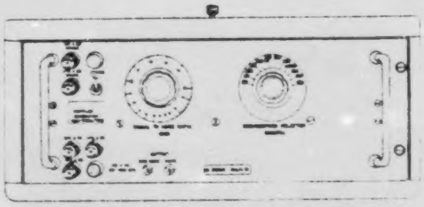
UPM-10 or equivalent



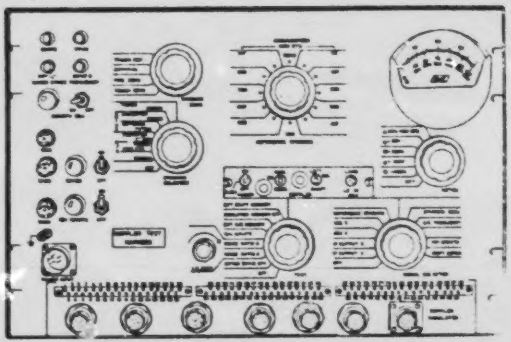
545B Oscilloscope



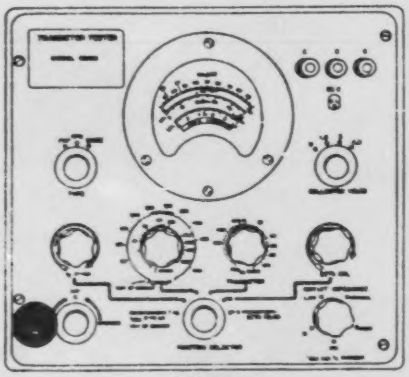
URM-25D



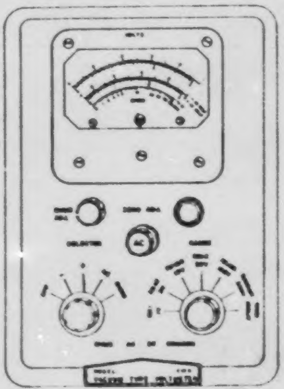
Doppler Generator CMA-546



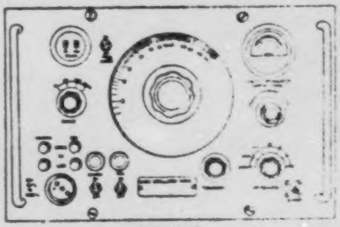
Doppler Test Harness CMA-543



1890M



410B VTVM or equivalent



TS-382

b. Remove operative Signal Comparator module from Frequency Tracker (see opposite page).

c. Install the Signal Comparator with the defective resistor R-6821 in the Frequency Tracker.

d. Review the technician's Test Instructions to familiarize yourself with them.

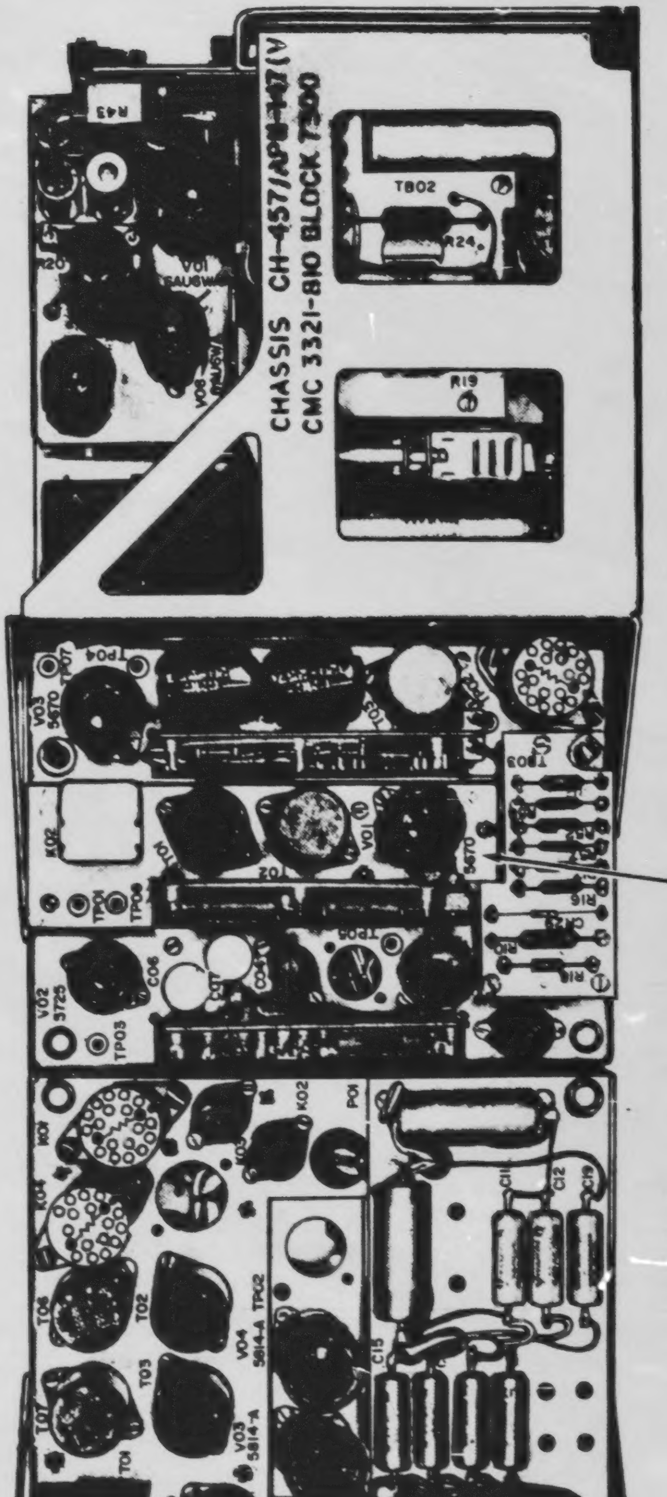
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


CHASSIS CH-457/APN-147(V)
CMC 3321-810 BLOCK T300
TB02
R24
R19
R43
V01
V08
V03 5670
TP04
K02
TP01
V01 5670
V02 5725
TP03
TP05
C06
C07
C05
R16
R18
TB03
K01
K04
K02
K03
P01
T06
T02
T03
T07
T01
V04 5814-A
V03 5814-A
TP02
V02 5670
TP01
C11
C12
C19
C15

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

TS-8

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational checkout to insure proper equipment functioning.

TS-8

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good module (see page 477).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-9, Frequency Mixer Stage Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

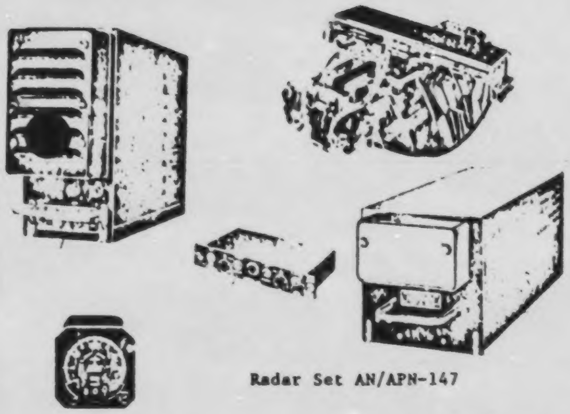
b. Test Equipment, to be available upon request. (See opposite page.)

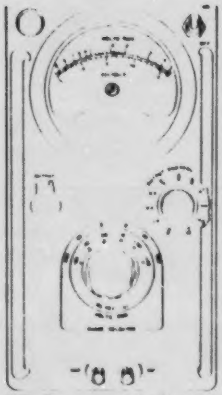
c. Hand Tools

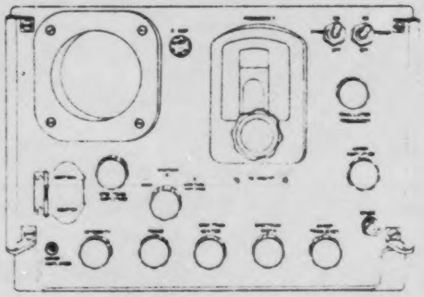
d. Defective 5670 Tube

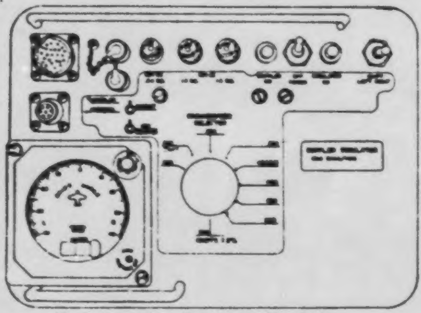
PRE-TEST SET-UP

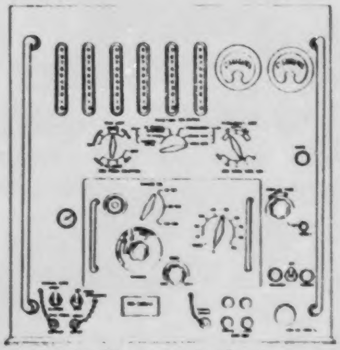
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.

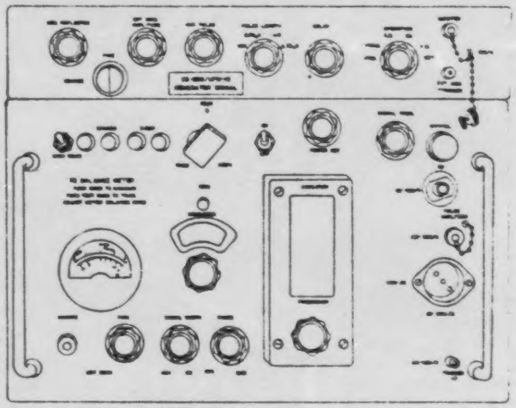

Radar Set AN/APN-147

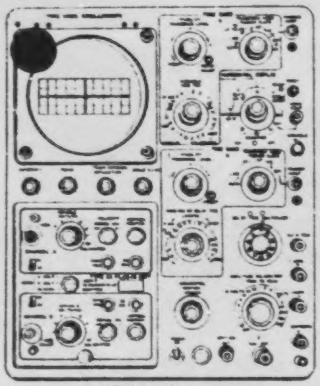

ME-6 or equivalent

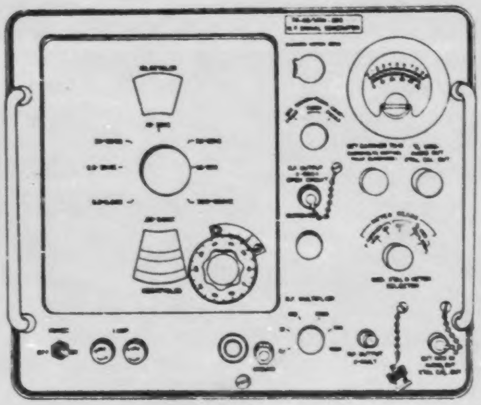

TS-148 or equivalent

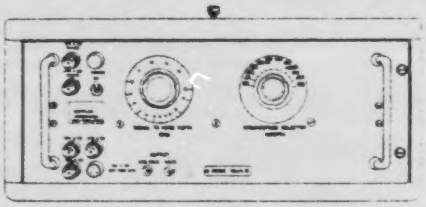

Doppler Simulator, CMA-544

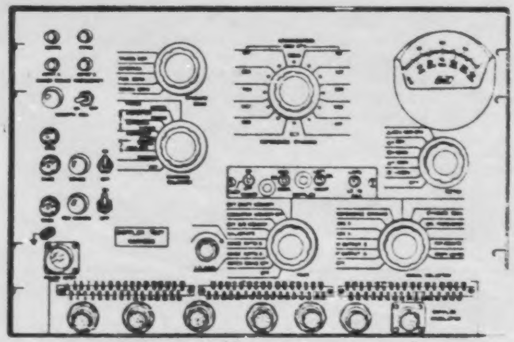

USM-26 or equivalent

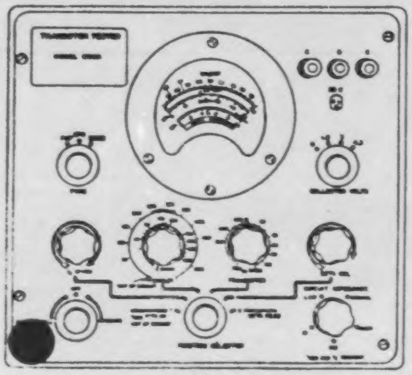

UPM-10 or equivalent

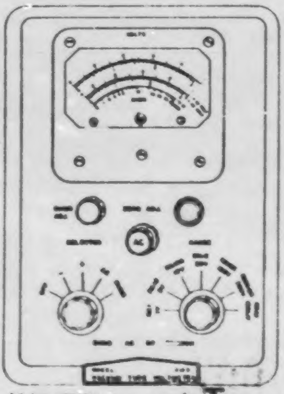

545B Oscilloscope

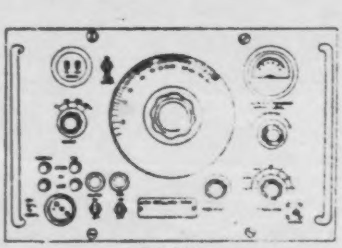

URM-25D


Doppler Generator CMA-546


Doppler Test Harness CMA-543


1890M


410B VTVM or equivalent


TS-382

b. Remove V-6701 (tube 5670) from the Frequency Mixer Stage (see opposite page).

c. Install the defective 5670 tube in V-6701.

d. Review the technician's Test Instructions to familiarize yourself with them.

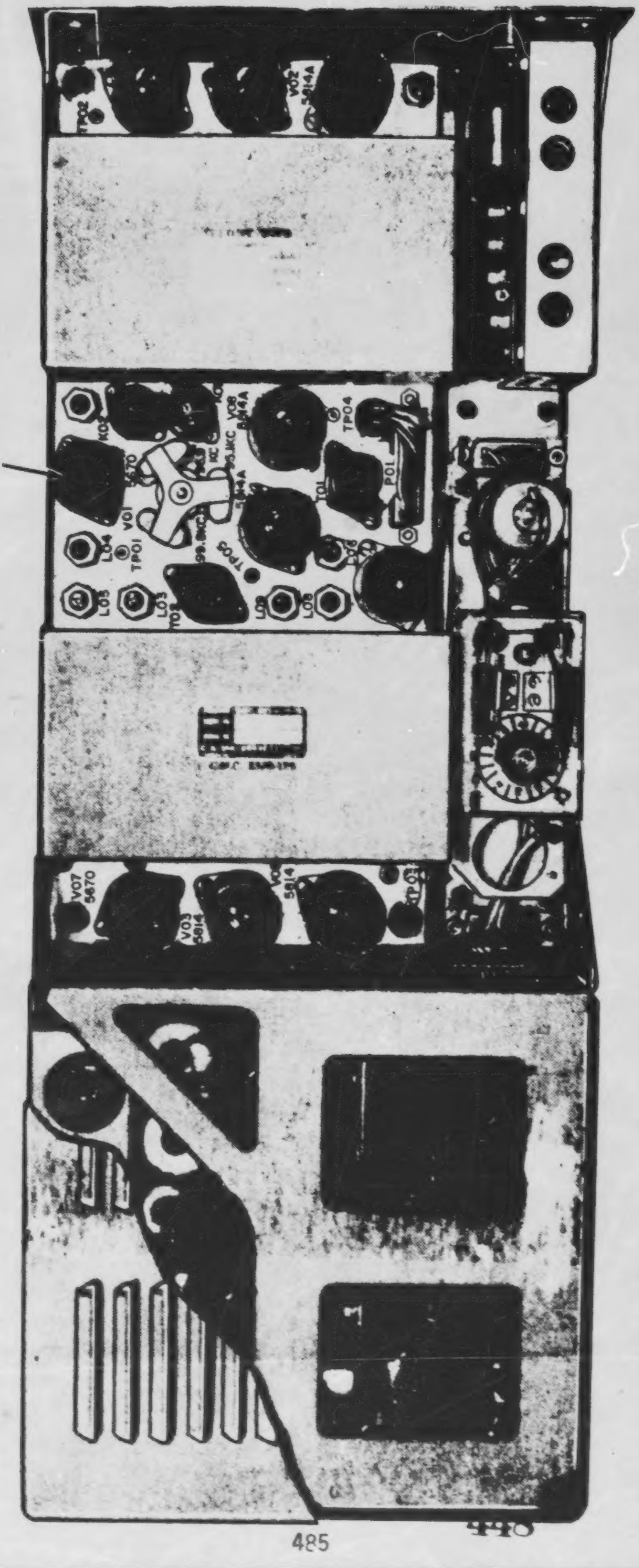
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


TP02
V02
5814A
K02
V08
5814A
TP04
5670
V01
TP01
L04
L05
L03
T03
TP03
T01
P01
L06
L08
V07
5670
V03
5814
5814
TP03
440

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

   1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

   2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

TS-9

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational check-out to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good tube (see page 485).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-10, Sequential Timer Sub-Assembly Troubleshooting

TIME ALLOTTED

60 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part IV.

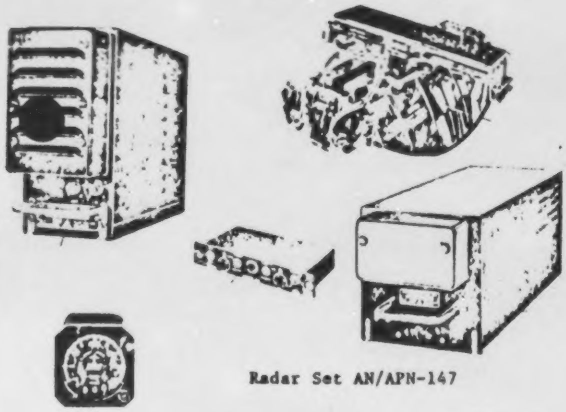
b. Test Equipment, to be available upon request. (See opposite page.)

c. Hand Tools

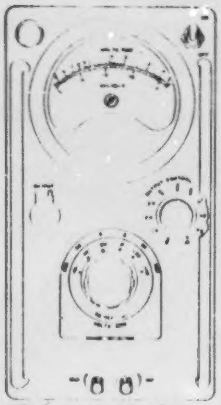
d. Defective Relay K-8001 on spare Sequential Timer module

PRE-TEST SET-UP

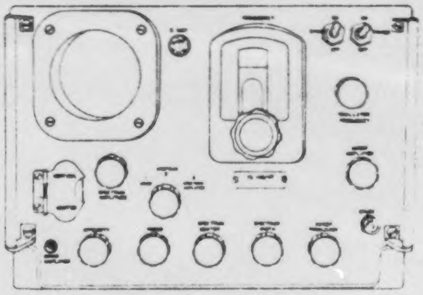
a. Perform an operational checkout of the Radar set to insure that it is functioning properly. Use the procedures outlined in Section A, Part V.



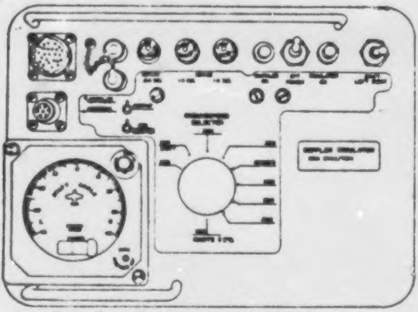
Radar Set AN/APN-147



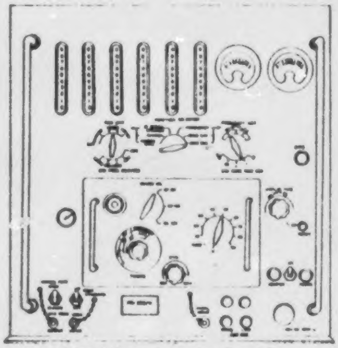
ME-6 or equivalent



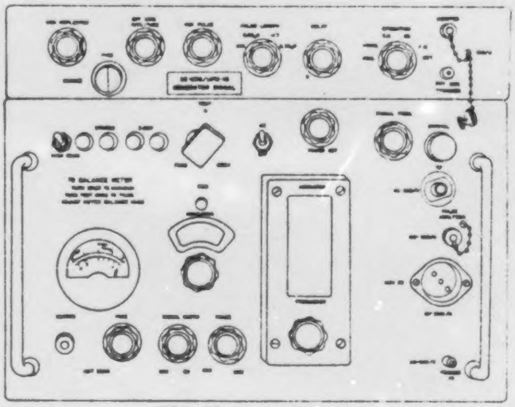
TS-148 or equivalent



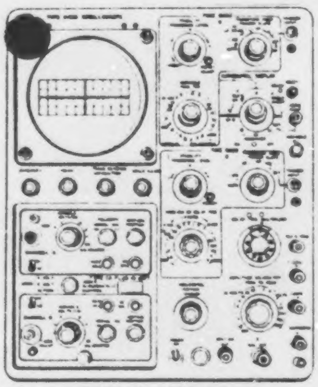
Doppler Simulator, CMA-544



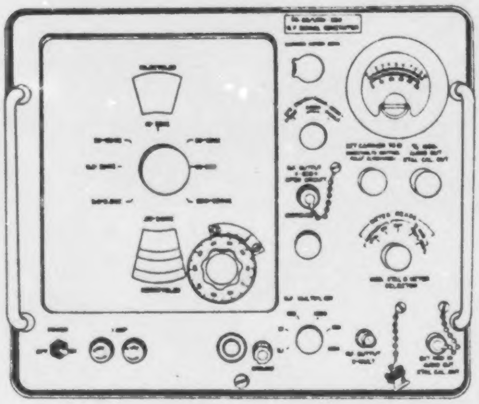
USM-26 or equivalent



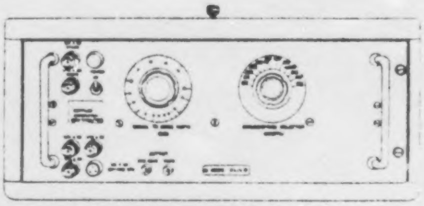
UPM-10 or equivalent



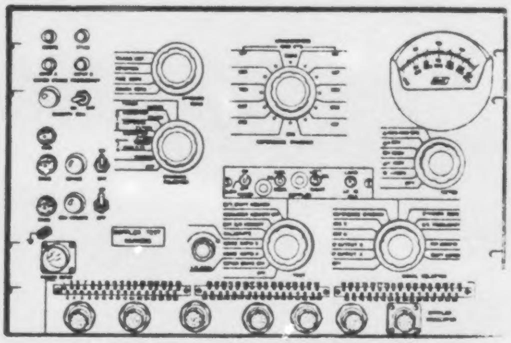
545B Oscilloscope



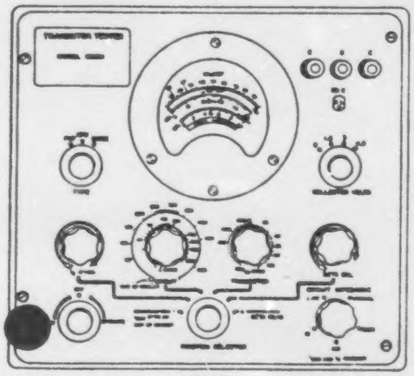
URM-25D



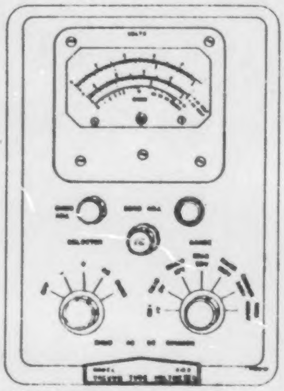
Doppler Generator CMA-546



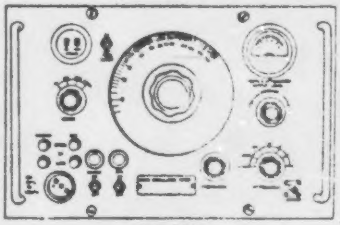
Doppler Test Harness CMA-543



1890M



410B VTVM or equivalent



TS-382

b. Remove operative Sequential Timer module from Frequency Tracker (see opposite page).

c. Install the defective Sequential Timer module in the Frequency Tracker.

d. Review the technician's Test Instructions to familiarize yourself with them.

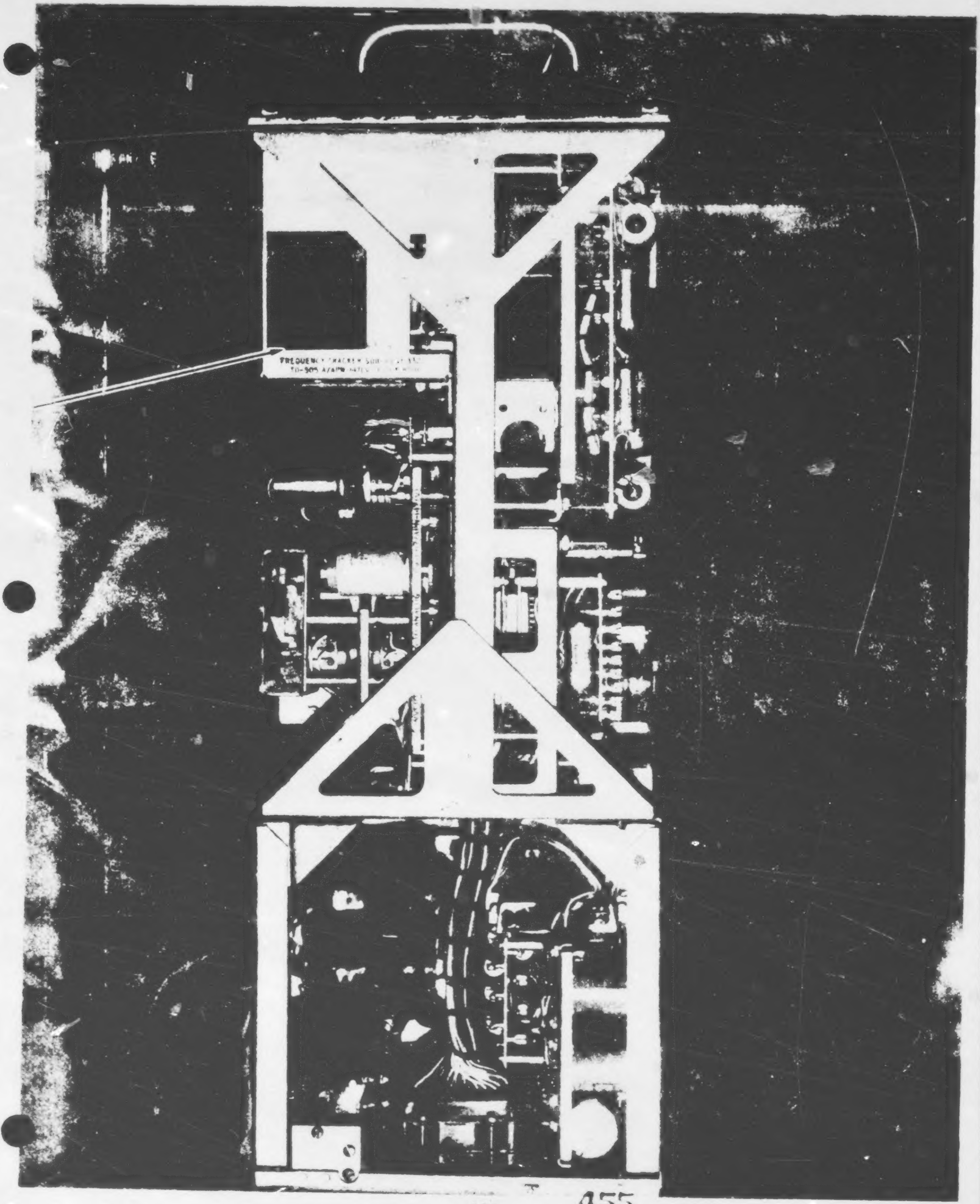
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.


FREQUENCY TRACKER SUBASSEMBLY
TD-905 A/APN

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

   1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

   2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational check-out to insure proper equipment functioning.

b. If the technician was unable to repair the radar set, correct the fault by re-installing the good module (see page 493).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

TEST ADMINISTRATOR INSTRUCTIONS

TEST

TS-11, Plug-in Board and Module Troubleshooting

TIME ALLOTTED

1 hour 30 minutes

SUPPORT MATERIALS REQUIRED

a. Bench test set-up as described in Section A, Part VII

b. Test Equipment, to be available upon request. (See opposite page.)

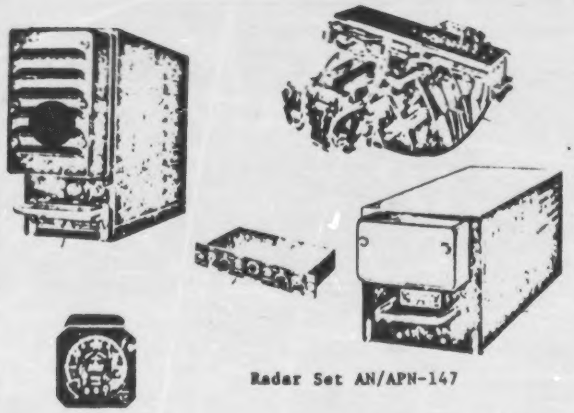
c. Hand Tools

d. Defective Diode CR-424 (IN2070) on spare Relay Chassis Assembly Module, 3158-150

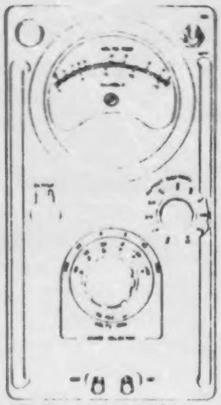
e. Defective Transistor Q-1404 (2N502A) on spare PNP Multiar and Flip-Flop Board Assembly, 3318-472.

PRE-TEST SET-UP

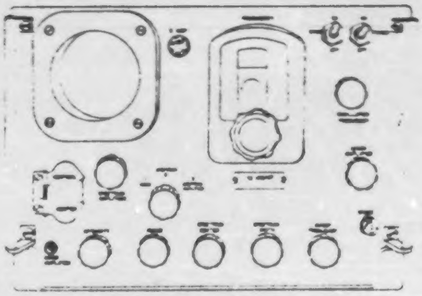
a. Perform an operational checkout of the Computer set to insure that it is functioning properly. Use the procedures outlined in Section A, Part VIII.



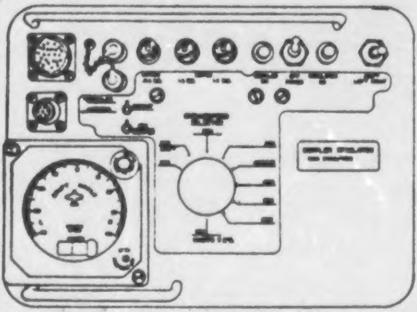
Radar Set AN/APN-147



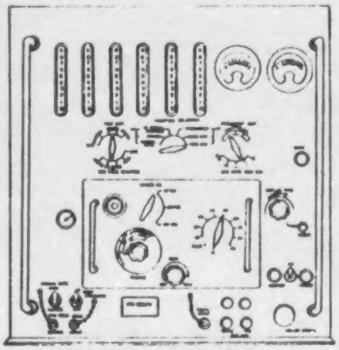
ME-6 or equivalent



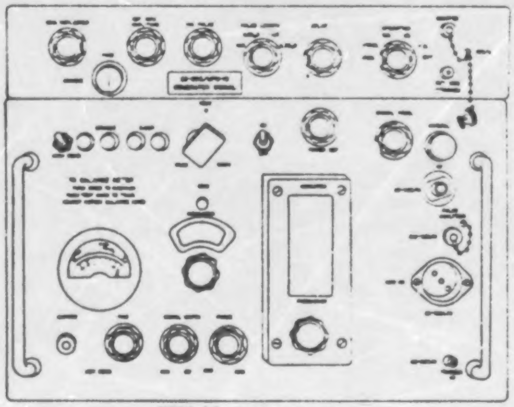
TS-148 or equivalent



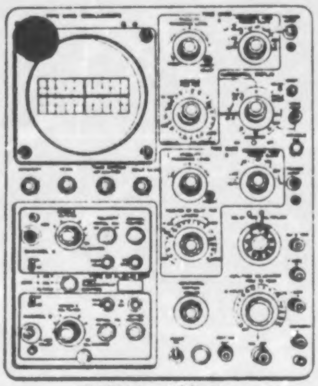
Doppler Simulator, CMA-544



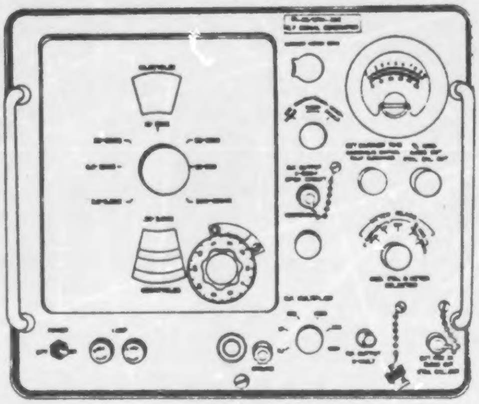
USM-26 or equivalent



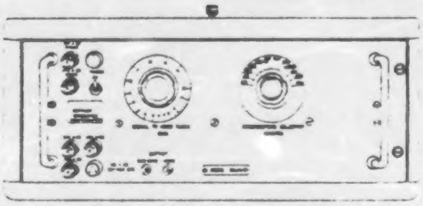
UPM-10 or equivalent



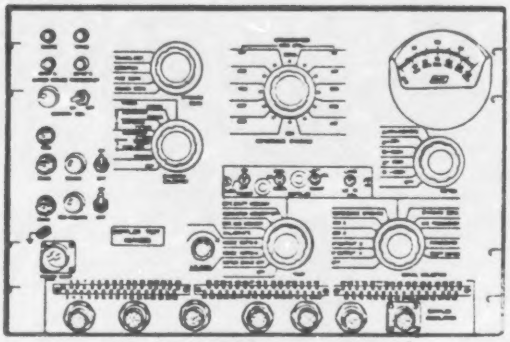
545B Oscilloscope



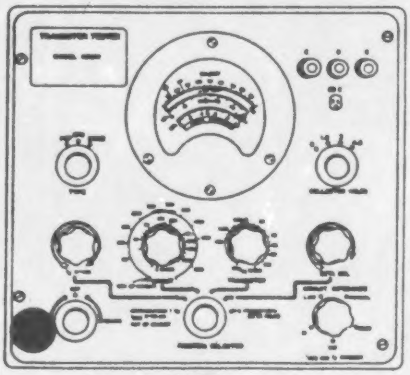
URM-25D



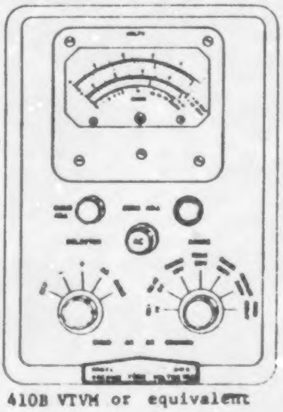
Doppler Generator CMA-546



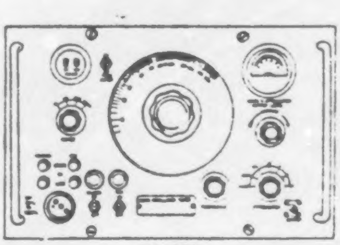
Doppler Test Harness CMA-543



1890M



410B VTVM or equivalent



TS-382

b. Remove operative Relay Chassis Assembly and PNP Multiar and Flip-Flop Board Assembly modules from the Computer. (See opposite page)

c. Install the defective Relay Chassis Assembly and PNP Multiar and Flip-Flop Board Assembly modules in the computer.

d. Review the technician's Test Instructions to familiarize yourself with them.

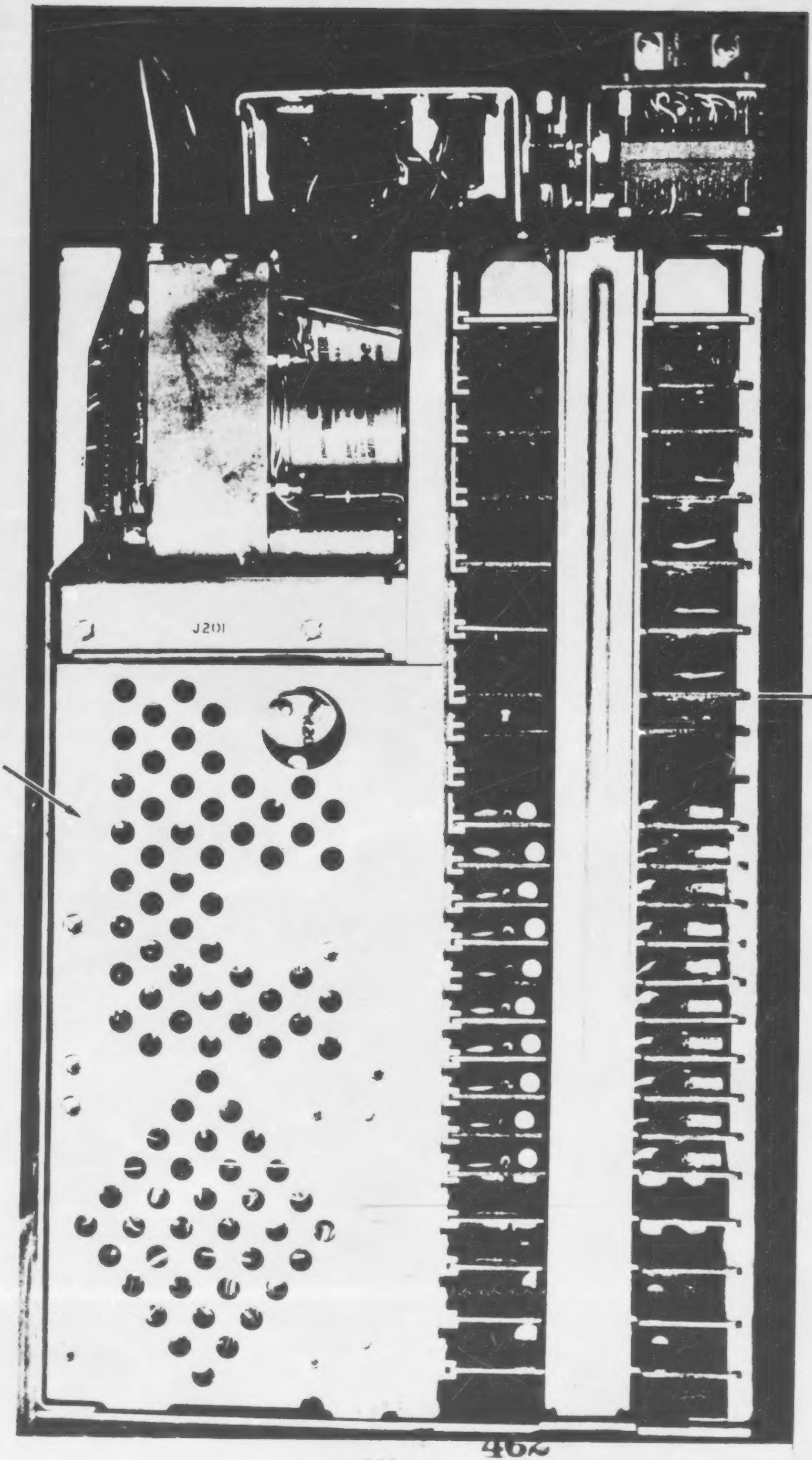
TEST ADMINISTRATION PROCEDURES

a. Have the technician read his instructions and put his identification number on his Answer Sheet and Performance Evaluation Sheet.

b. Collect the technician's Performance Evaluation Sheet.

c. Note the time and have the technician begin the test.

d. When the technician wants to replace a suspected faulty part or module, he must remove it from the set (WITHOUT UNSOLDERING ANY COMPONENTS) and bring it to you.



Relay
Chassis
Assembly

PNP
Multiar
&
Flip-Flop
Board
Assembly

e. When the technician requests a replacement component, he must specify the exact piece/part that he wants replaced.

f. If the technician has not properly specified the part he wants replaced on the module he has turned in, make him re-specify.

g. Once you are satisfied with the request, you either:

   1. Go to a remote area and exchange the module or part turned in for the good one, if the technician has identified the faulty part;

   OR

   2. Go to a remote area and simulate the exchanging of one module or part for another, if the technician has not identified the faulty component.

h. Return the module or part to the technician and inform him that the part he requested is now good.

i. Mark the part requested in sequence (1,2,3, etc.) on the technician's Performance Evaluation Sheet.

j. When the technician has completed the test or time has elapsed, collect his Answer Sheet.

PERFORMANCE EVALUATION PROCEDURE

a. When the technician turns in his answer sheet, compare his answer with the correct one.

b. Mark the technician's answer with an "X" if it is wrong.

c. Fasten the technician's Answer Sheet and Performance Evaluation Sheet together, insuring that his identification number is on both.

POST-TEST RECOVERY

a. If the technician has found and corrected the malfunction inserted into the equipment, perform an operational checkout to insure proper equipment functioning.

b. If the technician was unable to repair the Computer set, correct the fault by re-installing the good board and module (see page 501).

c. Perform an operational checkout.

d. If equipment is still malfunctioning, request assistance from local support.

SECTION C

TEST SUBJECT INSTRUCTIONS

INFORMATION SHEET

This is a series of tests on your ability to perform the maintenance tasks required by the AN/APN-147 Doppler Radar System and the associated AN/ASN-35 Computer.

This package contains all of the instructions for each test. You will be told when to use each set of instructions.

Before taking any of the tests, READ THE INSTRUCTIONS COMPLETELY AND CAREFULLY. If you have any questions, ask the Test Administrator.

During the testing, direct all requests for technical data, equipment, or other support to the Test Administrator.

Complete the Identification Sheet that you will be given. Jot down the ID number printed on it. You will have to use it for each test.

Identification No. ______________

IDENTIFICATION SHEET

1. RANK ______________________________

2. ORGANIZATION ______________________________

3. PRIMARY AFSC ____________ TIME HELD ______________

4. DUTY AFSC ______________________________

5. LENGTH OF EXPERIENCE ON AN/APN-147, AN/ASN-35: ____ YRS ____ MOS

6. DOES YOUR PRESENT JOB INCLUDE MAINTENANCE OF THE AN/APN-147-AN/ASN-35 SYSTEM? ___ YES ___ NO

7. WHAT USAF SCHOOL COURSES IN ELECTRONICS HAVE YOU HAD?

COURSE	DATE	LOCATION

TEST INSTRUCTIONS

1. TEST PT1

   Circuit Board Soldering Test

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.
   b. The Test Administrator will give you a printed circuit board and two resistors.
   c. Two resistors on the circuit board will be marked with grease pencil.
   d. Replace the marked resistors with the ones given to you.
   e. When you have finished, show the Test Administrator your work.

ID No. ____________

TEST PT1

PERFORMANCE EVALUATION SHEET

A. Compare the technician's work with your Checklist and complete the following evaluation.

Soldering is:

Resistor 1	Resistor 2	
________	________	Acceptable
________	________	Not acceptable - excess solder
________	________	Not acceptable - insufficient solder
________	________	Not acceptable - other (specify)

TEST INSTRUCTIONS

1. TEST PT2

   Electronic Piece/Part Removal and Replacement

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. Using the tools and electronic parts kit at your position, modify the Tutransitron Circuit as directed by the instructions that will be given you by the Test Administrator.

   c. Your work on this test will be graded on the basis of:

      1. quality of soldering
      2. correct piece/part selection and replacement
      3. correct installation of piece/part

   d. When you have completed the modifications, have the Test Administrator grade your work.

ID No. ____________

TEST PT-2

PERFORMANCE EVALUATION SHEET

	Proper Piece/Part	Proper Position	Pl	H	Solder
1					
2					
3					

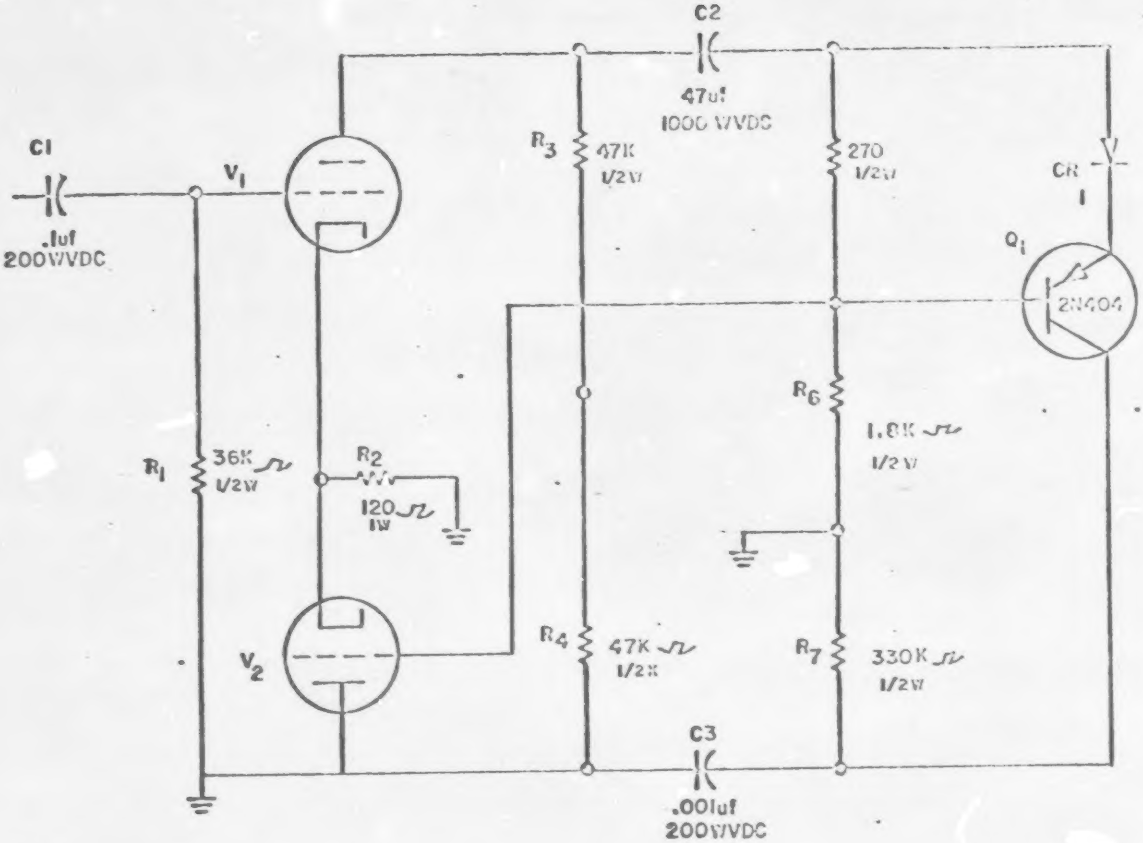
TEST INSTRUCTIONS

TEST PT2 (FORM 1)

Modifications to be made: (See attached schematic)

1. Remove R_5, 270 ohms, 1/2-watt resistor and replace with 27K ohm, 1/2-watt resistor.
2. Remove C_3, .001 uf, 200 WVDC capacitor and replace with .1 uf, 200 WVDC capacitor.
3. Remove Q_1, 2N404 transistor and replace with 2N338 transistor.

PT 2
FORM 1


C2
47uf
1000 WVDC
C1
.1uf
200WVDC
V1
R3
47K
1/2W
270
1/2W
CR
1
Q1
2N404
R1
36K Ω
1/2W
R2
120 Ω
1W
R6
1.8K Ω
1/2W
V2
R4
47K Ω
1/2W
R7
330K Ω
1/2W
C3
.001uf
200WVDC

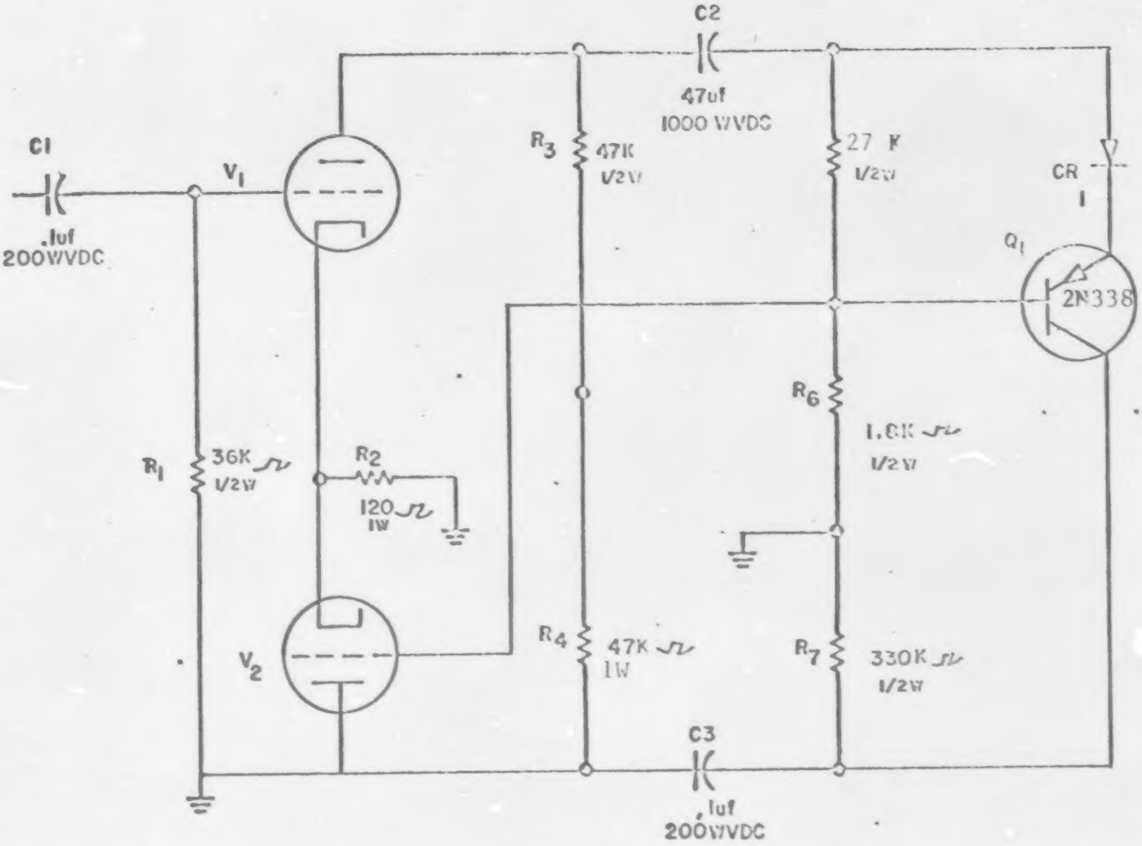
TUTRANSITRON, SCHEMATIC DIAGRAM

TEST INSTRUCTIONS

TEST PT2 (FORM 2)

Modifications to be made: (See attached schematic)

1. Remove R_5, 27K ohm, 1/2-watt resistor and replace with 270 ohm, 1/2-watt resistor.
2. Remove C_3, .1 uf, 200 WVDC capacitor and replace with .001 uf, 200 WVDC capacitor.
3. Remove Q_1, 2N338 transitor and replace with 2N404 transistor.


C1
.1uf
200WVDC
V1
C2
47uf
1000 WVDC
R3
47K
1/2W
27 K
1/2W
CR
1
Q1
2N338
R1
36K Ω
1/2W
R2
120 Ω
1W
R6
1.8K Ω
1/2W
V2
R4
47K Ω
1W
R7
330K Ω
1/2W
C3
.1uf
200WVDC

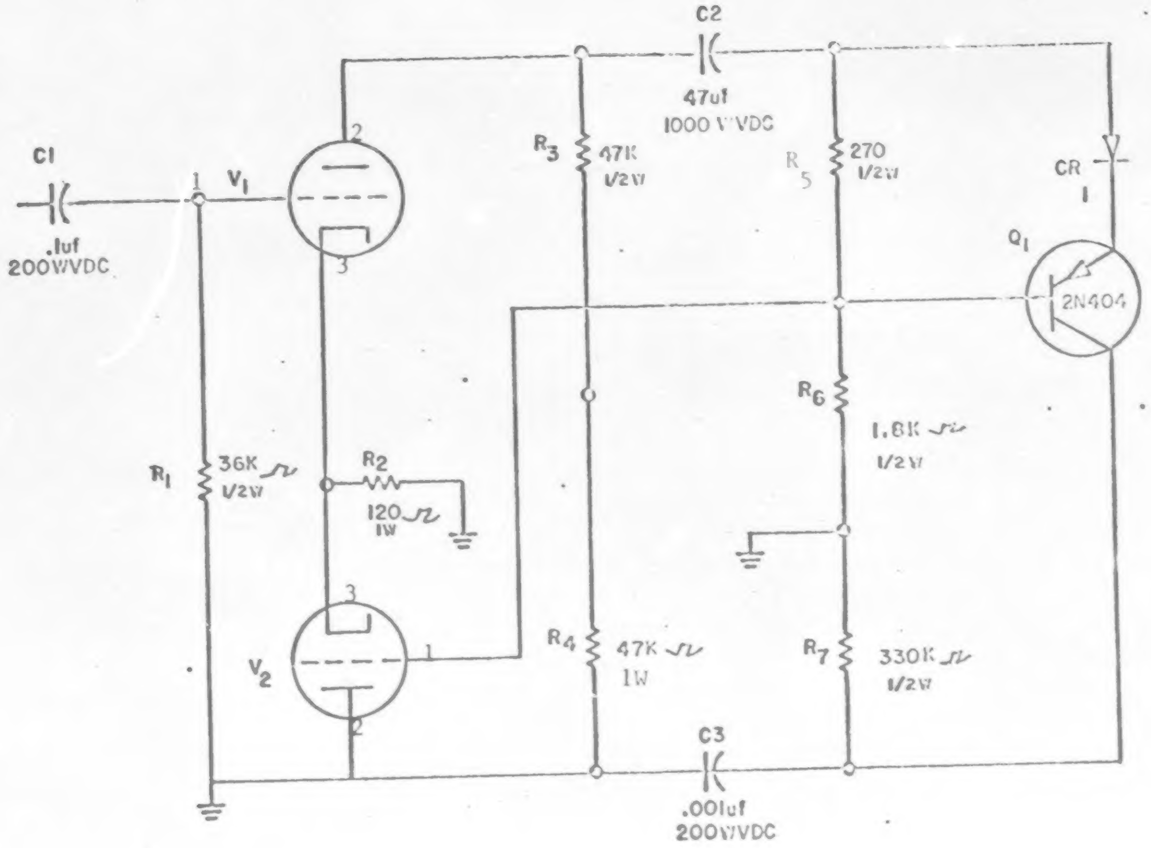
TUTRANSITRON, SCHEMATIC DIAGRAM

TEST PT2 (FORM 3)

Modifications to be made: (See attached schematic)

1. Remove R_3, 47K ohm, 1-watt resistor and replace with 330K ohm, 1-watt resistor.
2. Remove C_1, .luf, 200 WVDC capacitor and replace with .01 uf, 200 WVDC capacitor.
3. Remove R_6, 1.8K ohm, 1/2-watt resistor and replace with 47K ohm, 1-watt resistor.

PT 2
FORM 3


C2
47uf
1000 WVDC
C1
.1uf
200WVDC
1
V1
2
3
R3
47K
1/2W
R5
270
1/2W
CR
1
Q1
2N404
R6
1.8K
1/2W
R1
36K
1/2W
R2
120
1W
3
V2
1
2
R4
47K
1W
R7
330K
1/2W
C3
.001uf
200WVDC

TUTRANSITRON, SCHEMATIC DIAGRAM

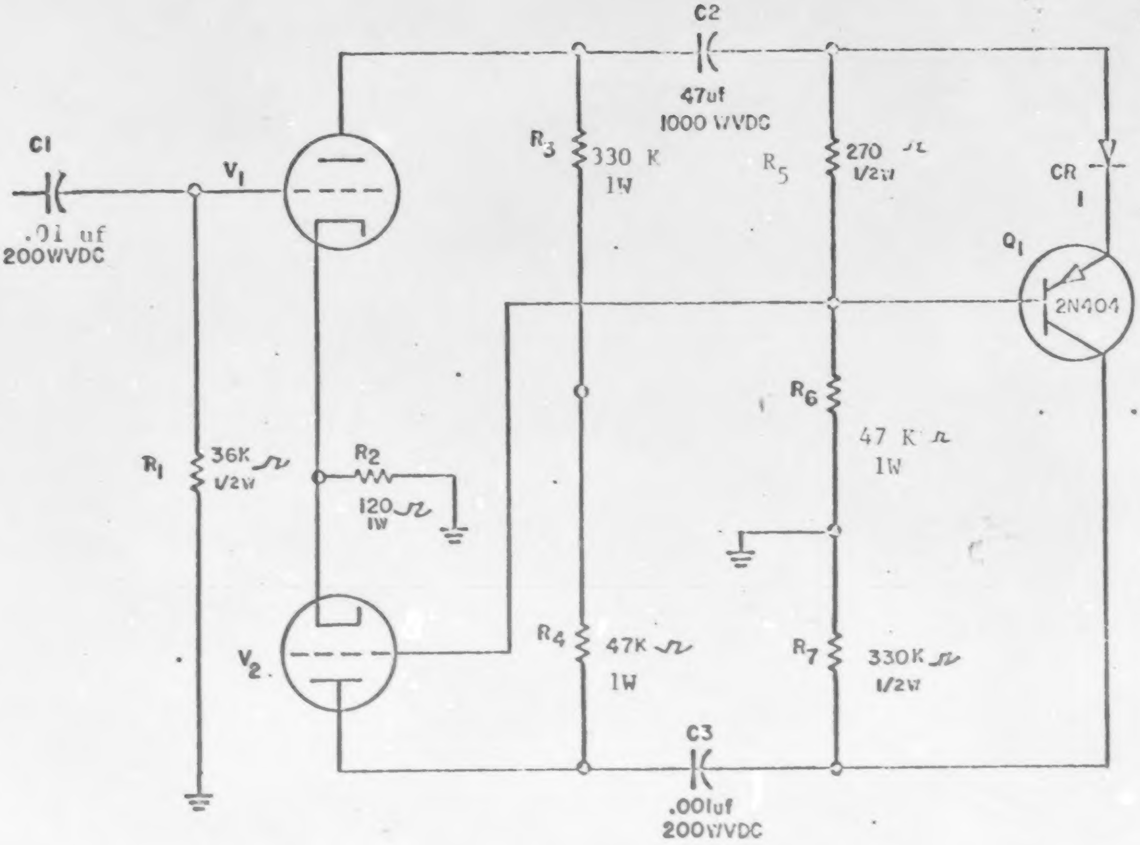
PT2-8S

TEST INSTRUCTIONS

TEST PT2 (FORM 4)

Modifications to be made: (See attached schematic)

1. Remove R_3, 330K ohm, 1-watt resistor and replace with 47K ohm, 1-watt resistor.
2. Remove C_1, .01 uf, 200 WVDC capacitor and replace with .1 uf, 200 WVDC capacitor.
3. Remove R_6, 47K ohm, 1-watt resistor and replace with 1.8K ohm 1/2-watt resistor.


C1
.01 uf
200WVDC
V1
R1
36K Ω
1/2W
R2
120 Ω
1W
V2
R3
330 K
1W
R4
47K Ω
1W
C2
47uf
1000 WVDC
R5
270 Ω
1/2W
R6
47 K Ω
1W
R7
330K Ω
1/2W
C3
.001uf
200WVDC
CR
1
Q1
2N404

TUTRANSITRON, SCHEMATIC DIAGRAM

PT2-10S

TEST INSTRUCTIONS

1. TEST GE1

   1890M Transistor Tester

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. You will be provided with a circuit board and a grease pencil.

   b. Use the 1890M Transistor Tester to determine whether any of the transistors on the barrel are bad.

   c. If you find a bad transistor, mark it with the grease pencil.

   d. Enter your assigned identification number on the Performance Evaluation Sheet.

   e. Give the Performance Evaluation Sheet, circuit board, and Test Instructions to the Test Administrator.

ID No. ____________

TEST GE-1

PERFORMANCE EVALUATION SHEET

Did the technician correctly identify the bad transistors?

___YES ___NO

TEST INSTRUCTIONS

1. TEST GE2

   Model TV-2 Electron Tube Test Set

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. For each tube provided, conduct the following tests using the TV-2 and record your answers on the answer sheet:

      - short test
      - interelement leakage test
      - filament continuity test
      - mutual conductance test
      - gas test
      - emission test

   b. Conduct all tests for each tube. Indicate on the answer sheet whether the tube tests good or bad on each test. In addition, for the "mutual conductance" and "emission" tests, record the actual values obtained in conducting these tests.

   c. Enter your assigned identification number on the Answer Sheet.

   d. Return all materials, instructions, and your Answer Sheet to the Test Administrator.

ID No. ____________

ANSWER SHEET

TEST - GE2

TUBE TYPE	SHORT TEST		INTERELEMENT LEAKAGE TEST		FILAMENT CONTINUITY TEST		MUTUAL CONDUCTANCE TEST			GAS TEST		EMISSION TEST			TUBE CONDITION		SCORING (ADMIN. USE ONLY)
	Good	Bad	Good	Bad	Good	Bad	Good	Bad	Value	Good	Bad	Good	Bad	Value	Good	Bad	
6AK6																	
6BQ7																	
6AH6																	

TEST INSTRUCTIONS

1. TEST GE3

   Model 410B Electronic Voltmeter

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   Section I

   a. Set VOLT/OHMS switch on Voltage/Resistance console to VOLTS position.

   b. Set selector switch to position "1".

   c. Connect VOM common lead to common post on Voltage/Resistance Console.

   d. Measure voltage at output terminals on Voltage/Resistance Console using probes as specified on Answer Sheet.

   e. Compare voltage reading with assigned value for switch position "1" given in Section I of your answer sheet.

   f. Indicate on attached answer sheet whether voltage reading obtained is within ± 10% of value listed.

   g. Repeat the voltage measurement for selector positions 2 through 10 and record your answers. Complete Section I and record all answers before going to Section II.

   Section II

   a. Set VOLT/OHM switch to OHM position

   b. Set selector switch to position "1".

c. Measure resistance across output terminals on Voltage/ Resistance Console.

d. Compare obtained resistance reading with assigned value for switch position "1" given in Section II of your answer sheet.

e. Indicate on the answer sheet whether resistance reading obtained is within ± 10% of value listed.

f. Repeat resistance measurement for selector positions 2 through 10 and record your answers.

g. Enter your assigned identification number on the Answer Sheet.

h. Give your Answer Sheet and Instructions to the Test Administrator.

ID No. ____________

TEST GE3

ANSWER SHEET

Section I

Switch Position	Assigned Value	In Tolerance?	
		YES	NO
1	4.5 vdc	___	___
2	17.5 vac	___	___
3	43 vac	___	___
4	40 vdc	___	___
5	24 vdc	___	___
6	9 vdc	___	___
7	3 vdc	___	___
8	6 vac	___	___
9	8 vac	___	___
10	30 vdc	___	___

Section II

Switch Position	Assigned Value		
1	100 ohms	___	___
2	38 ohms	___	___
3	100 ohms	___	___
4	11 k	___	___
5	6 k	___	___
6	16 k	___	___
7	260 k	___	___
8	400 K	___	___
9	7.5 Meg	___	___
10	4.5 Meg	___	___

ID No. ____________

TEST GE3

ANSWER SHEET

Section I - Voltage

Switch Position	Assigned Value	In Tolerance? YES	NO
1	6 vac	___	___
2	1.5 vdc	___	___
3	64 vac	___	___
4	12 vac	___	___
5	10 vac	___	___
6	0 vdc	___	___
7	3 vdc	___	___
8	10 vac	___	___
9	20 vac	___	___
10	30 vdc	___	___

Section II - Resistance

Switch Position	Assigned Value	YES	NO
1	100 ohms	___	___
2	100 ohms	___	___
3	1 k	___	___
4	9 k	___	___
5	30 k	___	___
6	5.6 k	___	___
7	260 k	___	___
8	180 k	___	___
9	1.7 Meg	___	___
10	00	___	___

TEST INSTRUCTIONS

1. TEST GE4

   Tektronic 545B Oscilloscope

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. This test contains eight problems that deal with the use of the oscilloscope.

   b. Each problem gives individual instructions. All the required equipment and components are available at the test bench.

   c. Problem 1 has one part and is evaluated by the Test Administrator.

   d. Problems 2-8 have two parts each. You must complete the Answer Sheets to:

      (1) indicate if an obtained waveform is in or out of tolerance.

      (2) record specific control settings used to obtain your answer.

   e. Enter your assigned identification number on each of the instruction/answer sheets and turn them in to the Test Administrator when completed.

ID No. ____________

TEST GE4

INSTRUCTIONS

PROBLEM 1, FORM 1

PROCEDURES:

a. Calibrate the two oscilloscope test probes at your test position.

b. Notify your Test Administrator as soon as you complete the test probe calibration.

PERFORMANCE EVALUATION

(To be Completed by Test Administrator)

Calibrated?

___ YES

___ NO

ID No. ____________

TEST GE4

PROBLEM 2, FORM 1

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

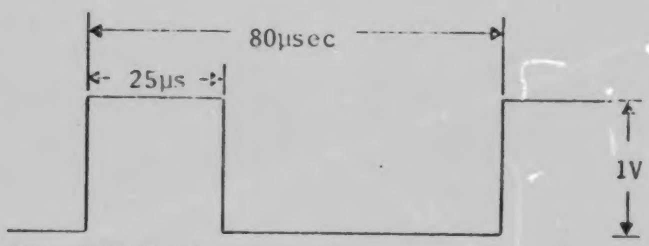
c. Determine the values of the waveform present at Test Point 6702 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within the tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=12.5 KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 2, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLT/CM (Channel A)	____________
AMPLITUDE CALIBRATOR	____________
TIME/CM (TIME BASE A)	____________
VARIABLE, TIME/CM (TIME BASE A)	____________
VARIABLE, VOLTS/CM (Channel A)	____________

ID No. ____________

TEST GE4

PROBLEM 3, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground your oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set the sweep to display approximately two cycles of the waveforms present at Test Point 6708 and 6712 on the Waveform Generator Console.

d. Set Channel "A" and Channel "B", Volts/CM controls at 1 and the Volts/CM Variable control at the Calibrated position.

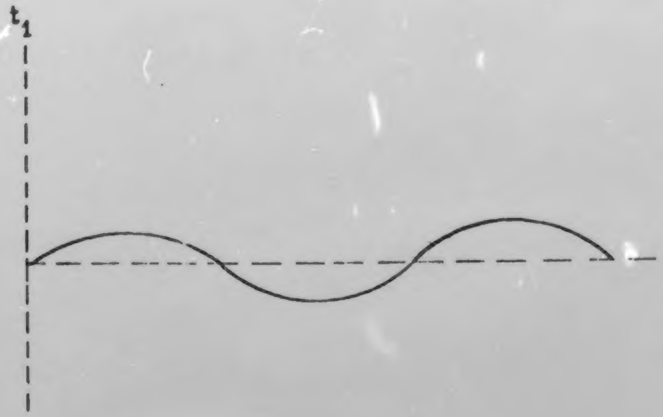
e. Use the available features of the oscilloscope to eliminate unwanted portions of a composite signal.

f. Compare the resultant waveform on the oscilloscope with the one shown below to determine if it is within tolerance of 0%.

g. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

h. When you have marked your answer, record your selected scope settings on the Oscilloscope Control Setting Answer Sheet.

i. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID NO. ____________________

TEST GE4

PROBLEM 3, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLTS/CM (Channel A)	____________________
VOLTS/CM (Channel B)	____________________
PREAMP MODE	____________________

GE-4-6S

ID No. ____________

TEST GE4

PROBLEM 4, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

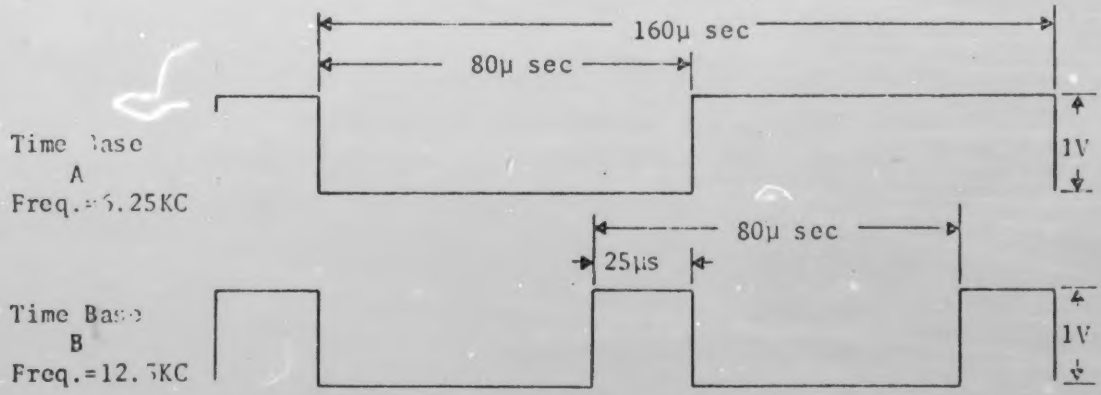
c. Determine the values of the waveforms present at Test Point 6702 and 6706 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveforms on the oscilloscope with the ones shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveforms are in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ___________

TEST GE4

PROBLEM 4, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLTS/CM (Channel A)	____________________
VOLTS/CM (Channel B)	____________________
MODE/Dual Trace Preamp	____________________
VARIABLE, TIME/CM (Time Base A)	____________________
VARIABLE, VOLTS/CM (Channel A)	____________________

ID No. ____________

TEST GE4

PROBLEM 5, FORM 1

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep to display seven pulse of the waveform present at Test Point 6710 on the Waveform Generator Console.

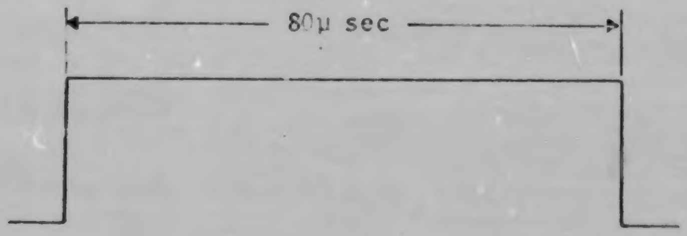
d. Utilize the delayed pulse feature to display the center pulse (4th positive going pulse from the left) in the center of the graticule.

e. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator to go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 5, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Trigger Mode (Time Base A)	
Horizontal Display	
DELAY Multiplier (Read-Out)	
Stability (Time Base A)	
Time/CM (Time Base A)	
Time/CM (Time Base B)	

ID No. ____________

TEST GE4

PROBLEM 6, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep for 20 usec per CM to displa y approximately one cycle of the waveform present at Test Point 6706 on the Waveform Generator Console.

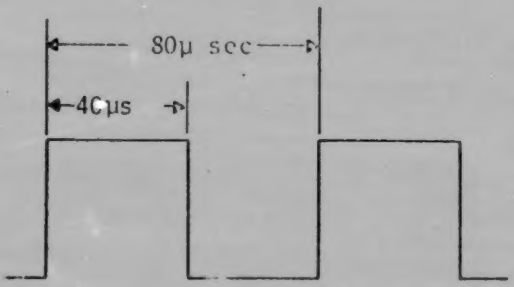
d. Use the delayed trigger to determine the width of one cycle.

e. Compare the resultant values of the waveform on the scope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test administrator and go to the next problem.



Freq.=6.25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 6, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Horizontal Display	____________________
Time/CM (Time Base B)	____________________
Delay-Time Multiplier	____________________
Preamp Mode	____________________

ID No. ____________

TEST GE4

PROBLEM 7, FORM 1

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set both Channel "A" and "B" Volts/CM to 1 and variable to calibrate position.

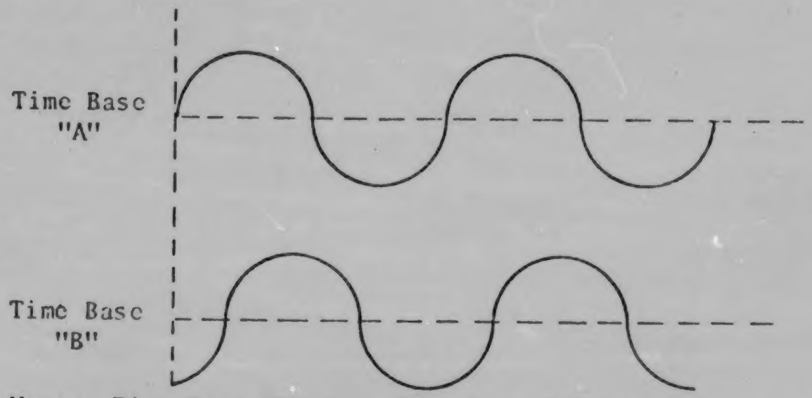
d. Display the Waveform Generator Console waveforms present at Test Point 6701 and 6712 on the oscilloscope.

e. Compare the phase relationship of the waveforms on the oscilloscope with the phase relationship of the waveforms shown below.

f. How does the set of waveforms displayed on the oscilloscope compare in phase relationship with the set shown below?

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Note: Time Base "B" lags Time Base "A" by 60 degrees.

How do the two sets of waveforms compare?

___ The phase relationship is the same in both sets?

___ The phase relationship is different between the two sets?

ID No. ____________

TEST GE4

PROBLEM 7

PROBLEM 7, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Horizontal Display	____________________
Time/CM (Time Base A)	____________________
Delay Time Multiplier	____________________
Preamp Mode	____________________

ID No. ____________

TEST GE4

PROBLEM 8, FORM 1

PROCEDURES:

a. Channel "A" will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

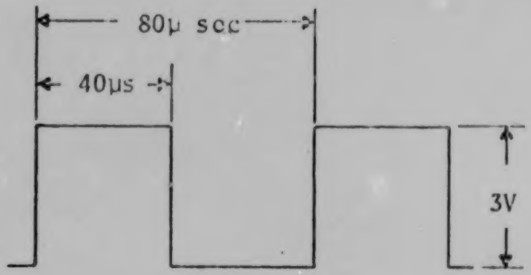
c. Determine the values of the waveform present at Test Point 6710 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform with the one shown below to determine if it is within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your Answer Sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 8, FORM 1

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Volts/CM (Channel A)	____________________
Amplitude Calibrator	____________________
Variable, Time/CM (Time Base A)	____________________

ID No. ___________

TEST GE4

INSTRUCTIONS

PROBLEM 1, FORM 2

PROCEDURES:

a. Calibrate the two oscilloscope test probes at your test position.

b. Notify your Test Administrator as soon as you complete the test probe calibration.

PERFORMANCE EVALUATION

(To be completed by Test Administrator)

Calibrated?

___ YES

___ NO

ID No. ____________

TEST GE4

PROBLEM 2, FORM 2

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

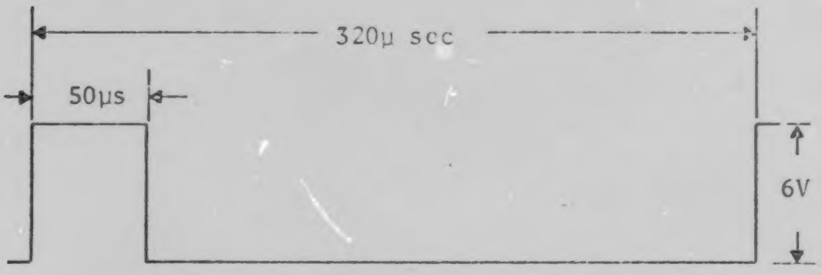
c. Determine the values of the waveform present at Test Point 6702 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within the tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point Waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 2, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLT/CM (Channel A)	
AMPLITUDE CALIBRATOR	
TIME/CM (TIME BASE A)	
VARIABLE, TIME/CM (TIME BASE A)	
VARIABLE, VOLTS/CM (Channel A)	

ID No. ____________

TEST GE4

PROBLEM 3, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground your oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set the sweep to display approximately two cycles of the waveforms present at Test Point 6708 and 6712 on the Waveform Generator Console.

d. Set Channel "A" and Channel "B", Volts/CM controls at 1 and the Volts/CM Variable control at the Calibrated position.

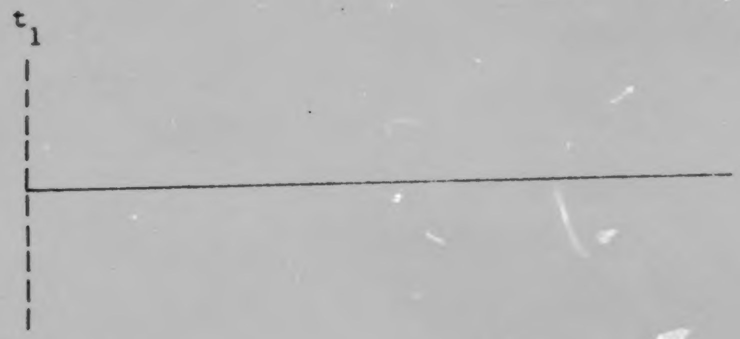
e. Use the available features of the oscilloscope to eliminate unwanted portions of a composite signal.

f. Compare the resultant waveform on the oscilloscope with the one shown below to determine if it is within tolerance of 0%.

g. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

h. When you have marked your answer, record your selected scope settings on the Oscilloscope Control Setting Answer Sheet.

i. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 3, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Volts/CM (Channel A)	____________
Volts/CM (Channel B)	____________
Preamp Mode	____________

ID No. ____________

TEST GE4

PROBLEM 4, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

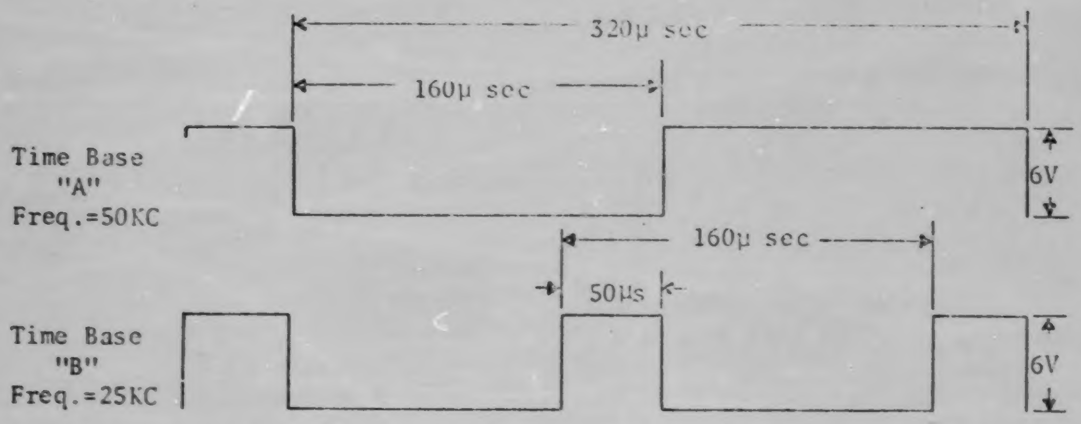
c. Determine the values of the waveforms present at Test Point 6702 and 6706 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveforms on the oscilloscope with the ones shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveforms are in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 4, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLTS/CM (Channel A)	
VOLTS/CM (Channel B)	
MODE/Dual Trace Preamp	
VARIABLE, TIME/CM (Time Base A)	
VARIABLE, VOLTS/CM (Channel A)	

ID No. ____________

TEST GE4

PROBLEM 5, FORM 2

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep to display seven pulse of the waveform present at Test Point 6710 on the Waveform Generator Console.

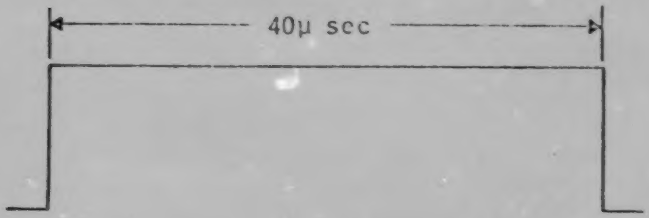
d. Utilize the delayed pulse feature to display the center pulse (4th positive going pulse from the left) in the center of the graticule.

e. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 5, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Trigger Mode (Time Base A)	
Horizontal Display	
DELAY Multiplier (Read-out)	
Stability (Time Base A)	
Time/CM (Time Base A)	
Time/CM (Time Base B)	

ID No. ____________

TEST GE4

PROBLEM 6, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep for 20 usec per CM to display approximately one cycle of the waveform present at Test Point 6706 on the Waveform Generator Console.

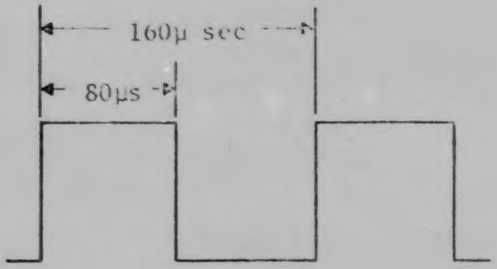
d. Use the delayed trigger to determine the width of one cycle.

e. Compare the resultant values of the waveform on the scope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 6, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Horizontal Display	________________
Time/CM (Time Base B)	________________
Delay-Time Multiplier	________________
Preamp Mode	________________

ID No. ___________

TEST GE4

PROBLEM 7, FORM 2

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set both Channel "A" and "B" Volts/CM to 1 and variable to calibrate position.

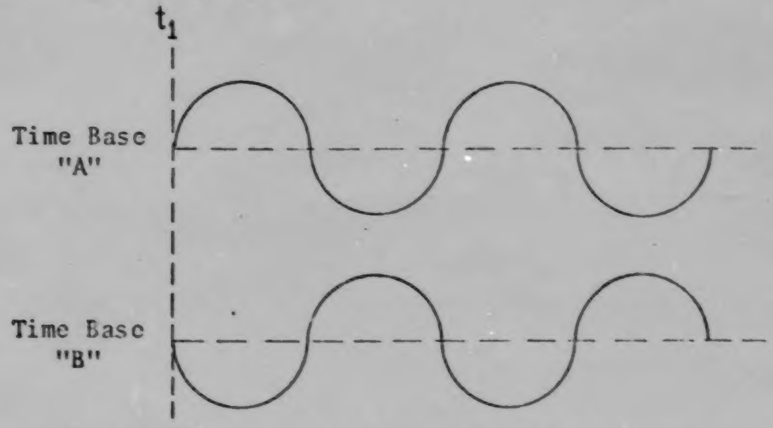
d. Display the Waveform Generator Console waveforms present at Test Point 6701 and 6712 on the oscilloscope.

e. Compare the phase relationship of the waveforms on the oscilloscope with the phase relationship of the waveforms shown below.

f. How does the set of waveforms displayed on the oscilloscope compare in phase relationship with the set shown below?

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Note: Time Base "B" lags Time Base "A" by 180 degrees

How do the two sets of waveform compare?

___ The phase relationship is the same in both sets?

___ The phase relationship is different between the two sets?

ID No. ____________

TEST GE4

PROBLEM 7, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Horizontal Display	____________
Time/CM (Time Base A)	____________
Delay Time Multiplier	____________
Preamp Mode	____________

ID No. ___________

TEST GE4

PROBLEM 8, FORM 2

PROCEDURES:

a. Channel "A" will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

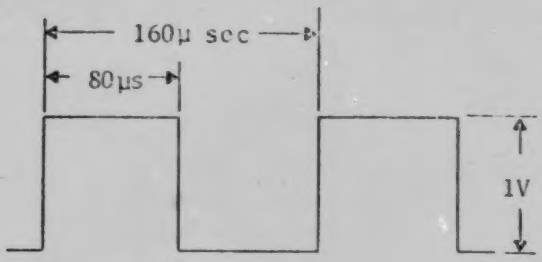
c. Determine the values of the waveform present at Test Point 6710 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform with the one shown below to determine if it is within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point Waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 8, FORM 2

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Volts/CM (Channel A)	
Amplitude Calibrator	
Variable, Time/CM (Time Base A)	

ID No. ____________

TEST GE4

INSTRUCTIONS

PROBLEM 1, FORM 3

PROCEDURES:

a. Calibrate the two oscilloscope test probes at your test position.

b. Notify your Test Administrator as soon as you complete the test probe calibration.

PERFORMANCE EVALUATION

(To be completed by Test Administrator)

Calibrated?

___ YES

___ NO

ID No. ____________

TEST GE4

PROBLEM 2, FORM 3

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

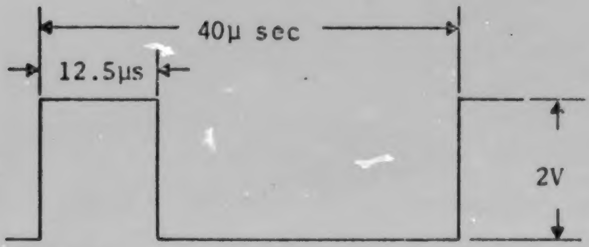
c. Determine the values of the waveform present at Test Point 6702 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within the tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=6.25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 2, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLT/CM (Channel A)	____________
AMPLITUDE CALIBRATOR	____________
TIME/CM (TIME BASE A)	____________
VARIABLE, TIME/CM (TIME BASE A)	____________
VARIABLE, VOLTS/CM (Channel A)	____________

ID No. ____________

TEST GE4

PROBLEM 3, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground your oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set the sweep to display approximately two cycles of the waveforms present at Test Point 6708 and 6712 on the Waveform Generator Console.

d. Set Channel "A" and Channel "B", Volts/CM controls at 1 and the Volts/CM Variable control at the Calibrated position.

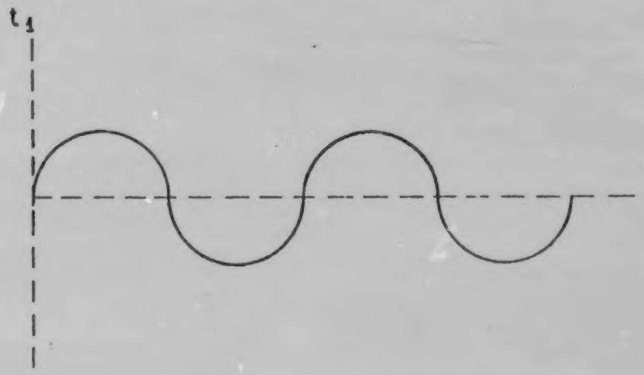
e. Use the available features of the oscilloscope to eliminate unwanted portions of a composite signal.

f. Compare the resultant waveform on the oscilloscope with the one shown below to determine if it is within tolerance of 0%.

g. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

h. When you have marked your answer, record your selected scope settings on the Oscilloscope Control Setting Answer Sheet.

i. Return your answer sheet to the Test Administrator and go to the next problem.



Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 3, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Volts/CM (Channel A)	____________
Volts/CM (Channel B)	____________
Preamp Mode	____________

ID No. ____________

TEST GE4

PROBLEM 4, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

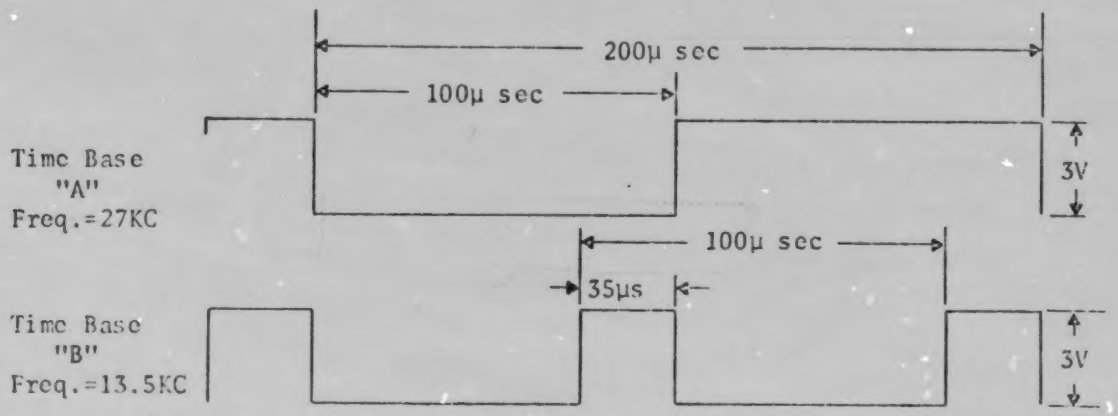
c. Determine the values of the waveforms present at Test Point 6702 and 6706 on the Waveform Generator Console.

d. Compare all of the resultant values of the waveforms on the oscilloscope with the ones shown below to determine if they are within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveforms are in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



__ Within Tolerance

__ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 4, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
VOLTS/CM (Channel A)	____________
VOLTS/CM (Channel B)	____________
MODE/Dual Trace Preamp	____________
VARIABLE, TIME/CM (Time Base A)	____________
VARIABLE, VOLTS/CM (Channel A)	____________

ID No. ___________

TEST GE4

PROBLEM 5, FORM 3

PROCEDURES:

a. Channel "A" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep to display seven pulse of the waveform present at Test Point 6710 on the Waveform Generator Console.

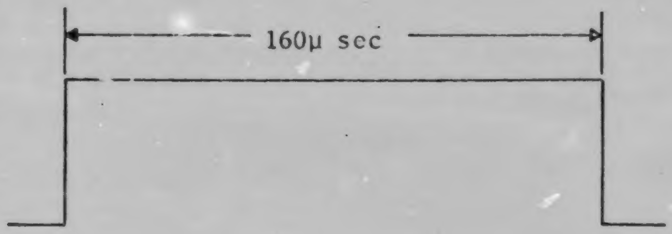
d. Utilize the delayed pulse feature to display the center pulse (4th positive going pulse from the left) in the center of the graticule.

e. Compare all of the resultant values of the waveform on the oscilloscope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point Waveform is in or out of tolerance.

g. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 5, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Trigger Mode (Time Base A)	____________
Horizontal Display	____________
DELAY Multiplier (Read-out)	____________
Stability (Time Base A)	____________
Time/CM (Time Base A)	____________
Time/CM (Time Base B)	____________

ID No. ____________

TEST GE4

PROBLEM 6, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

c. Set the sweep for 20 usec per CM to display approximately one cycle of the waveform present at Test Point 6706 on the Waveform Generator Console.

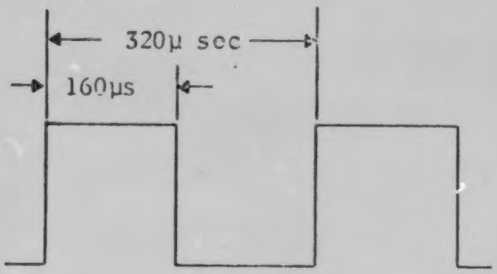
d. Use the delayed trigger to determine the width of one cycle.

e. Compare the resultant values of the waveform on the scope with the one shown below to determine if it is within tolerance of ± 10%.

f. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Freq.=25KC

___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 6, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Horizontal Display	____________
Time/CM (Time Base B)	____________
Delay-Time Multiplier	____________
Preamp Mode	____________

GE4-42S

ID No. ____________

TEST GE4

PROBLEM 7, FORM 3

PROCEDURES:

a. Channels "A" and "B" on the oscilloscope will be used for this problem.

b. Ground the oscilloscope to the "Neutral" connection indicated on the Waveform Generator Console.

c. Set both Channel "A" and "B" Volts/CM to 1 and variable to calibrate position.

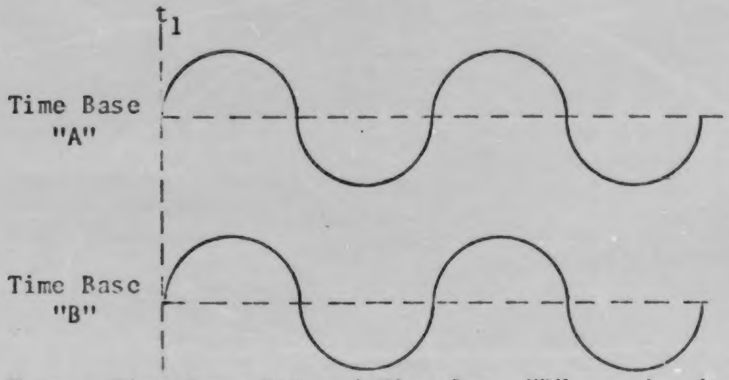
d. Display the Waveform Generator Console waveforms present at Test Point 6701 and 6712 on the oscilloscope.

e. Compare the phase relationship of the waveforms on the oscilloscope with the phase relationship of the waveforms shown below.

f. How does the set of waveforms displayed on the oscilloscope compare in phase relationship with the set shown below?

g. When you have marked your answer, record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

h. Return your answer sheet to the Test Administrator and go to the next problem.



Note: Time Base "A" and Time Base "B" are in phase

___ The phase relationship is the same in both sets?

___ The phase relationship is different between the two sets?

ID No. ____________

TEST GE4

PROBLEM 7, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Horizontal Display	____________
Time/CM (Time Base A)	____________
Delay Time Multiplier	____________
Preamp Mode	____________

ID No. ____________

TEST GE4

PROBLEM 8, FORM 3

PROCEDURES:

a. Channel "A" will be used for this problem.

b. Ground the oscilloscope to the "Ground" connection indicated on the Waveform Generator Console.

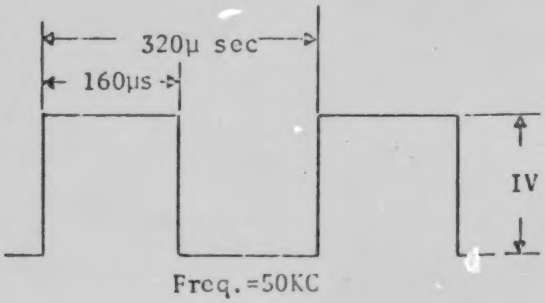
c. Determine the values of the waveform present at Test Point on the Waveform Generator Console.

d. Compare all of the resultant values of the waveform with the one shown below to determine if it is within tolerance of ± 10%.

e. Mark the appropriate answer box below to indicate whether the Test Point waveform is in or out of tolerance.

f. Record your selected scope control settings on the Oscilloscope Control Setting Answer Sheet.

g. Return your answer sheet to the Test Administrator and go to the next problem.



___ Within Tolerance

___ Out of Tolerance

ID No. ____________

TEST GE4

PROBLEM 8, FORM 3

OSCILLOSCOPE CONTROL SETTING ANSWER SHEET

CONTROL	SETTING
Volts/CM (Channel A)	____________________
Volts/CM (Channel B)	____________________
Preamp Mode	____________________

TEST INSTRUCTIONS

1. TEST CO-1

   Radar Set, AN/APN-147 Operational Check

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Radar Set Operational Check.

   c. Make your bench setup and have the Test Administrator check it before you apply any power.

   d. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   e. Demonstrate to the Test Administrator that you can perform the Radar Set Operational Check.

ID No. ______________

TEST C01

PERFORMANCE EVALUATION SHEET

A. Did the technician set up equipment properly to perform the Radar Set Operational Check?

___ YES ___ NO

B. Was the technician able to satisfactorily perform the Radar Set Operational Check?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST CO-2

   Operational Check-Out Navigational Computer Set, AN/ASN-35

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Computer Set Operational Check-Out.

   c. Make your bench setup and have the Test Administrator check it before you apply any power.

   d. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   e. Demonstrate to the Test Administrator that you can perform the Computer Set Operational Check-Out.

ID No. ____________

TEST C02

PERFORMANCE EVALUATION SHEET

A. Did the technician set up equipment properly to perform the Computer Set Operational Check-Out?

___ YES ___ NO

B. Was the technician able to satisfactorily perform the Computer Set Operational Check-Out?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST SE-1

   Signal Generator, AN/URM-25D Usage Test

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the AGC Circuit Adjustments.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the AGC Circuit and make any necessary adjustments. You may use any procedures and equipment available with one exception: Signal Generator, AN/URM-25D must be used for this test.

   d. Notify the Test Administrator when you are satisfied that the AGC Circuit is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your results.

   e. Enter your assigned identification number on the Performance Evaluation Sheet. Give it to the Test Administrator along with these instructions.

ID No. ____________

TEST SE-1

PERFORMANCE EVALUATION SHEET

Did the technician properly connect and set the Signal Generator, AN/URM-25D for the AGC Circuit adjustment?

___YES ___NO

TEST INSTRUCTIONS

1. TEST SE-2

   Doppler Generator, CMA-546 Usage Test

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Lock-Check Operation Test.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Perform the Lock-Check Operation Test. You may use any procedure and equipment available with one exception: Doppler Generator CMA-546 must be used for this test.

   d. Notify the Test Administrator when you are satisfied that the Lock-Check Operation is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your results.

   e. Enter your assigned identification number on the Performance Evaluation Sheet. Give it to the Test Administrator along with these instructions.

ID No. ____________

TEST SE-2

PERFORMANCE EVALUATION SHEET

Did the technician properly connect and set up the Doppler Generator to perform the Lock-Check Operation test?

___YES ___NO

TEST INSTRUCTIONS

1. TEST SE-3

   Audio Oscillator, TS-382 Usage Test

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Second Balanced Modulator V-6709 Cathode Balance Adjustment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Perform the Cathode Balance Adjustment. You may use any procedure and equipment available with one exception: Audio Oscillator, TS-382 must be used for this test.

   d. Notify the Test Administrator when you are satisfied that the Second Balanced Modulator V-6709 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your results.

   e. Enter your assigned identification number on the Performance Evaluation Sheet. Give it to the Test Administrator along with these instructions.

ID NO._______________

TEST SE-3

PERFORMANCE EVALUATION SHEET

Did the technician properly connect and set the Audio Oscillator to perform the Second Balanced Modulator V-6709 Cathode Balance Adjustment?

______YES   ______NO

TEST INSTRUCTIONS

1. TEST RR-1

   Crystal, Y-6701, Removal and Replacement

2. TIME ALLOTTED

   10 minutes

3. INSTRUCTIONS

   a. Remove Crystal, Y-6701, from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace Crystal, Y-6701.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement, and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ____________

TEST RR-1

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the radar set operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-2

   RF Oscillator, V-6201, Removal and Replacement

2. TIME ALLOTTED

   20 minutes

INSTRUCTIONS

a. Remove RF Oscillator, V-6201, from its chassis. Notify the Test Administrator as soon as you complete the removal.

b. After the Test Administrator has checked your work, replace RF Oscillator, V-6201.

c. Enter your assigned identification number on the Performance Evaluation Sheet.

d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ____________

TEST RR-2

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the radar set operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-3

   Frequency Mixer, CV-1186/APN-147, Removal and Replacement

2. TIME ALLOTTED

   10 minutes

3. INSTRUCTIONS

   a. Remove Frequency Mixer, CV-1186/APN-147, from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace Frequency Mixer, CV-1186/APN-147.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement, and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ____________

TEST RR-3

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the radar set operate properly after the part was reinstalled?

___ YES ___ NO

RR3-2S

TEST INSTRUCTIONS

1. TEST RR-4

   Signal Comparator, CM-213/APN-147, Removal and Replacement

2. TIME ALLOTTED

   10 minutes

3. INSTRUCTIONS

   a. Remove Signal Comparator, CM-213/APN-147, from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace Signal Comparator, CM-213/APN-147.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ____________

TEST RR-4

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the radar set operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-5

   Sequential Timer, TD-505A/APN-147, Removal and Replacement

2. TIME ALLOTTED

   10 minutes

3. INSTRUCTIONS

   a. Remove Sequential Timer, TD-505A/APN-147, from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace Sequential Timer, TD-505A/APN-147.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ____________

TEST RR-5

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the radar set operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-6

   Crystal Mixer, CR-7602 (side A) Removal and Replacement

2. TIME ALLOTTED

   10 minutes

3. INSTRUCTIONS

   a. Remove Crystal Mixer, CR-7602 (side A) from its holder. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace Crystal Mixer, CR-7602.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ___________

TEST RR-6

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the radar set operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-7

   Blower Motor Assembly, B-501, Removal and Replacement

2. TIME ALLOTTED

   15 minutes

3. INSTRUCTIONS

   a. Remove Blower Motor Assembly, B-501, from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace the Blower Motor Assembly in its chassis.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ______________

TEST RR-7

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

____YES ____NO

B. Did the radar set operate properly after the part was reinstalled?

____YES ____NO

TEST INSTRUCTIONS

1. TEST RR-8

   Track Resolver Drive Assembly Removal and Replacement

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Remove the Track Resolver Drive Assembly from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace the Track Resolver Drive Assembly.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ___________

TEST RR-8

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the computer operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-9

   Translator Drive Assembly, Removal and Replacement

2. TIME ALLOTTED

   15 minutes

3. INSTRUCTIONS

   a. Remove the Translator Drive Assembly from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace the Translator Drive Assembly.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ____________

TEST RR-9

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the computer operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST RR-10

   Relay, K-410, Removal and Replacement

2. TIME ALLOTTED

   20 minutes

3. INSTRUCTIONS

   a. Remove the Relay, K-410, from its chassis. Notify the Test Administrator as soon as you complete the removal.

   b. After the Test Administrator has checked your work, replace the Relay, K-410.

   c. Enter your assigned identification number on the Performance Evaluation Sheet.

   d. Notify the Test Administrator when you have completed the replacement and give him the Test Instructions and Performance Evaluation Sheet.

ID No. ___________

TEST RR-10

PERFORMANCE EVALUATION SHEET

A. Did the technician remove and replace the correct part?

___ YES ___ NO

B. Did the computer operate properly after the part was reinstalled?

___ YES ___ NO

TEST INSTRUCTIONS

1. TEST AD-1

   Transmitter Output Power Adjustment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Transmitter Output Power Adjustment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Transmitter Output Power and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Transmitter Output Power is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AD-1

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly complete the Transmitter Output Power Adjustment?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AD-2

   Modulator Adjustment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Modulator Adjustment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Modulator and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Modulator is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AD-2

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly complete the Modulator Adjustment?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AD-3

    Crystal Oscillator V-6701A Adjustment

2. TIME ALLOTTED

    30 minutes

3. INSTRUCTIONS

    a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Crystal Oscillator, V-6701A Adjustment.

    b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

    c. Check the Crystal Oscillator, V-6701A and make any necessary adjustment. You may use any procedures and equipment available.

    d. Notify the Test Administrator when you are satisfied that the Crystal Oscillator, V-6701A is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

    e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

    f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AD-3

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope
____VOM
____VTVM
____Signal Generator
____Sweep Generator
____Transistor Tester
____Audio Oscillator
____Frequency Meter
____Power Meter
____Spectrum Analyzer
____Distortion Indicator
____Tube Tester
____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly complete the Crystal Oscillator V-6701A Adjustment?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AD-4

   Lock-Check Resistor R-6806 Adjustment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Lock-Check Resistor R-6806 Adjustment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Lock-Check Resistor and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Lock-Check Resistor R-6806 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No.____________

TEST AD-4

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilliscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly complete the Lock-Check Resistor R-6806 Adjustment?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AD-5

   Power Supply Adjustments

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Power Supply Adjustments.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Power Supply and make any necessary adjustments. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Power Supply is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________________

TEST AD-5

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____ Oscilloscope
____ VOM
____ VTVM
____ Signal Generator
____ Sweep Generator
____ Transistor Tester
____ Audio Oscillator
____ Frequency Meter
____ Power Meter
____ Spectrum Analyzer
____ Distortion Indicator
____ Tube Tester
____ Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly complete the Power Supply Adjustment?

____ YES ____ NO

TEST INSTRUCTIONS

1. TEST AD-6

   Sine-Cosine Potentiometer R-301 Adjustment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Navigational Computer Set, AN/ASN-35, with the appropriate test equipment to make the Sine-Cosine Potentiometer R-301 Adjustment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Sine-Cosine Potentiometer R-301 Adjustment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Sine-Cosine Potentiometer, R-301, is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AD-6

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly complete the Sine-Cosine Potentiometer R-301 Adjustment?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-1

   Antenna Synchro Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Antenna Synchro Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Antenna Synchro Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Antenna Synchro is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-1

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Antenna Synchro?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-2

   200-KC Bandpass Filter Alignment

2. TIME ALLOTTED

   45 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the 200-KC Bandpass Filter Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the 200-KC Bandpass Filter Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the 200-KC Bandpass Filter is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-2

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the 200-KC Bandpass Filter?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-3

   Groundspeed and Drift Circuits Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Radar Set, AN/APN-147, with the appropriate test equipment to make the Groundspeed and Drift Circuits Alignment.
   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.
   c. Check the Groundspeed and Drift Circuits Alignment and make and necessary adjustment. You may use any procedures and equipment available.
   d. Notify the Test Administrator when you are satisfied that the Groundspeed and Drift Circuits are within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.
   e. Enter you assigned identification number on the Performance Evaluation Sheet and complete your portion of it.
   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

AL3-1S

ID No. ____________

TEST AL-3

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope
____VOM
____VTVM
____Signal Generator
____Sweep Generator
____Transistor Tester
____Audio Oscillator
____Frequency Meter
____Power Meter
____Spectrum Analyzer
____Distortion Indicator
____Tube Tester
____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Groundspeed and Drift Circuits?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-4

Computer Binary Division Alignment

2. TIME ALLOTTED

45 minutes

3. INSTRUCTIONS

a. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Computer Binary Division Ratio Alignment.

b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

c. Check the Computer Binary Division Ratio Alignment and make any necessary adjustment. You may use any procedures and equipment available.

d. Notify the Test Administrator when you are satisfied that the Computer Binary Division Ratio is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-4

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Computer Binary Ratio?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-5

   Computer Resolver Bridge Balancing Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Computer Resolver Bridge Balancing Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Computer Resolver Balancing Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Computer Resolver Bridge Balancing is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-5

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Computer Resolver Bridge Balance?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-6

   Transmitter Synchros TX-501, TX-502 and TX-503 Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Computer Set, ASN-35, with the appropriate test equipment to make the Transmitter Synchros TX-501, TX-502 and TX-503 Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Transmitter Synchros TX-501, TX-502, and TX-503 Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Transmitter Synchros TX-501, TX-502, and TX-503 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-6

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Transmitter Synchros TX-501, TX-502, and TX-503?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-7

   Control Transformer CT-501 Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Control Transformer CT-501 Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Control Transformer CT-501 Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Control Transformer CT-501 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-7

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Osciloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Control Transformer CT-501?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-8

   Control Transformer CT-301 Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Control Transformer CT-301 Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Control Transformer CT-301 Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Control Transformer CT-301 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-8

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Control Transformer CT-301?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-9

   Transmitter Synchro TX-302 Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Transmitter Synchro TX-302 Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Transmitter Synchro TX-302 Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Transmitter Synchro TX-302 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-9

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Transmitter Synchro TX-302?

____YES ____NO

TEST INSTRUCTIONS

1. TEST AL-10

   Transmitter Synchro TX-301 Alignment

2. TIME ALLOTTED

   30 minutes

3. INSTRUCTIONS

   a. Set up the Computer Set, AN/ASN-35, with the appropriate test equipment to make the Transmitter Synchro TX-301 Alignment.

   b. Make your bench setup and have the Test Administrator check it before you apply any power. When the Test Administrator has checked your setup, he will instruct you to proceed with the test.

   c. Check the Transmitter Synchro TX-301 Alignment and make any necessary adjustment. You may use any procedures and equipment available.

   d. Notify the Test Administrator when you are satisfied that the Transmitter Synchro TX-301 is within tolerance limits. Be prepared to demonstrate to the Test Administrator how you obtained your answers.

   e. Enter your assigned identification number on the Performance Evaluation Sheet and complete your portion of it.

   f. Return the Test Instructions and Performance Evaluation Sheet to the Test Administrator.

ID No. ____________

TEST AL-10

PERFORMANCE EVALUATION SHEET

I. TO BE COMPLETED BY TECHNICIAN:

Place a check beside the equipment that you used in this test.

____Oscilloscope

____VOM

____VTVM

____Signal Generator

____Sweep Generator

____Transistor Tester

____Audio Oscillator

____Frequency Meter

____Power Meter

____Spectrum Analyzer

____Distortion Indicator

____Tube Tester

____Semiconductor Diode Tester

II. TO BE COMPLETED BY TEST ADMINISTRATOR:

Did the technician properly align the Tranxmitter Synchro TX-301?

____YES ____NO

TEST INSTRUCTIONS

1. TEST

   TS-1

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Radar Set, AN/APN-147, makes the system inoperatove.

   c. The malfunction is NOT due to a faulty alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS- 1

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.____________

TEST TS-1

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope
____ VOM
____ VTVM
____ Signal Generator
____ Sweep Generator
____ Tube Tester
____ Transistor Checker
____ Frequency Meter
____ Power Meter
____ Spectrum Analyzer
____ Distortion Indicator
____ Semiconductor Diode Tester
____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

TS-2

2. TIME ALLOTTED

60 minutes.

3. INSTRUCTIONS

a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

c. The malfunction is NOT due to a faulty alignment or adjustment.

d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS- 2

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS-2

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope

____ VOM

____ VTVM

____ Signal Generator

____ Sweep Generator

____ Tube Tester

____ Transistor Checker

____ Frequency Meter

____ Power Meter

____ Spectrum Analyzer

____ Distortion Indicator

____ Semiconductor Diode Tester

____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

TS-3

2. TIME ALLOTTED

60 minutes

3. INSTRUCTIONS

a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

c. The malfunction is NOT due to a faulty alignment or adjustment.

d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.__________________

TEST TS- 3

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS- 3

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope
____ VOM
____ VTVM
____ Signal Generator
____ Sweep Generator
____ Tube Tester
____ Transistor Checker

____ Frequency Meter
____ Power Meter
____ Spectrum Analyzer
____ Distortion Indicator
____ Semiconductor Diode Tester
____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-4

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.
   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.
   c. The malfunction is NOT due to a faulty alignment or adjustment.
   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.
   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.
   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.
   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.
   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS-4

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS-4

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope
____ VOM
____ VTVM
____ Signal Generator
____ Sweep Generator
____ Tube Tester
____ Transistor Checker
____ Frequency Meter
____ Power Meter
____ Spectrum Analyzer
____ Distortion Indicator
____ Semiconductor Diode Tester
____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-5

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

   c. The malfunction is NOT due to a faulty alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS-5

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS-5

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope

____ VOM

____ VTVM

____ Signal Generator

____ Sweep Generator

____ Tube Tester

____ Transistor Checker

____ Frequency Meter

____ Power Meter

____ Spectrum Analyzer

____ Distortion Indicator

____ Semiconductor Diode Tester

____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-6

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

   c. The malfunction is NOT due to a faulty alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS-6

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____
Audio Amplifier ____
I-F Amplifier ____
R/T Power Supply ____
Frequency Mixer Stage ____
Electronic Control Amplifier ____
Sequential Timer ____
Analog Converter ____
Signal Comparator ____
F/T Power Supply ____

Capacitor ____
Coil ____
Crystal ____
Diode ____
Fuse ____
Gear Assembly ____
Motor ____
Plug-in Card ____
Potentiometer ____
Relay ____
Resistor ____
Synchro ____
Switch ____
Tube ____
Transformer ____
Transistor ____
Wiring or Printing Circuit Repair ____

ID No. ________________

TEST TS-6

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope

____ VOM

____ VTVM

____ Signal Generator

____ Sweep Generator

____ Tube Tester

____ Transistor Checker

____ Frequency Meter

____ Power Meter

____ Spectrum Analyzer

____ Distortion Indicator

____ Semiconductor Diode Tester

____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-7

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.
   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.
   c. The malfunction is NOT due to a faulty alignment or adjustment.
   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.
   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.
   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.
   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.
   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS-7

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS- 7

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope

____ VOM

____ VTVM

____ Signal Generator

____ Sweep Generator

____ Tube Tester

____ Transistor Checker

____ Frequency Meter

____ Power Meter

____ Spectrum Analyzer

____ Distortion Indicator

____ Semiconductor Diode Tester

____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-8

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

   c. The malfunction is NOT due to a faulty alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS- 8

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS-8

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope

____ VOM

____ VTVM

____ Signal Generator

____ Sweep Generator

____ Tube Tester

____ Transistor Checker

____ Frequency Meter

____ Power Meter

____ Spectrum Analyzer

____ Distortion Indicator

____ Semiconductor Diode Tester

____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-9

2. TIME ALLOTTED

   60 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

   c. The malfunction is NOT due to a faulty alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

   g. If you suspect that a certian resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS-9

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS-9

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope
____ VOM
____ VTVM
____ Signal Generator
____ Sweep Generator
____ Tube Tester
____ Transistor Checker

____ Frequency Meter
____ Power Meter
____ Spectrum Analyzer
____ Distortion Indicator
____ Semiconductor Diode Tester
____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-10

2. TIME ALLOTTED

   60 minutes.

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Radar Set, AN/APN-147, makes the system inoperative.

   c. The malfunction is NOT due to a faulty alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective part. Use what ever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test them on appropriate test equipment.

   g. If you suspect that a certain resistor, capacitor, transistor, or other non-plug-in item is defective, remove the module containing that part from its chassis. Ask the Test Administrator for a replacement module in which that part is good.

   h. If you decide a tube or other plug-in is defective, ask the Test Administrator for a good replacement.

i. After you receive a serviceable part or module from the Test Administrator, replace the item and recheck the system.

j. Enter your assigned identification number on your Answer Sheet, enter your answer, and give the Answer Sheet to the Test Administrator.

ID No.____________________

TEST TS-10

PERFORMANCE EVALUATION SHEET

MODULE

Modulator ____

Audio Amplifier ____

I-F Amplifier ____

R/T Power Supply ____

Frequency Mixer Stage ____

Electronic Control Amplifier ____

Sequential Timer ____

Analog Converter ____

Signal Comparator ____

F/T Power Supply ____

Capacitor ____

Coil ____

Crystal ____

Diode ____

Fuse ____

Gear Assembly ____

Motor ____

Plug-in Card ____

Potentiometer ____

Relay ____

Resistor ____

Synchro ____

Switch ____

Tube ____

Transformer ____

Transistor ____

Wiring or Printing Circuit Repair ____

ID No.________________

TEST TS-10

ANSWER SHEET

A. What defective part did you find? Name part and Schematic designation.

____

B. Check Test Equipment you used for troubleshooting.

____ Oscilloscope

____ VOM

____ VTVM

____ Signal Generator

____ Sweep Generator

____ Tube Tester

____ Transistor Checker

____ Frequency Meter

____ Power Meter

____ Spectrum Analyzer

____ Distortion Indicator

____ Semiconductor Diode Tester

____ Audio Oscillator

TEST INSTRUCTIONS

1. TEST

   TS-11

2. TIME ALLOTTED

   1 hour 30 minutes

3. INSTRUCTIONS

   a. Enter your assigned identification number on the attached Performance Evaluation Sheet and give it to the Test Administrator.

   b. A problem in the Navigational Computer Set, ASN-35, makes the system inoperative.

   c. The malfunction is NOT due to a alignment or adjustment.

   d. Troubleshoot and isolate the malfunction to the defective module or plug-in only. Use whatever techniques and equipment that are available to localize the problem.

   e. DO NOT UNSOLDER ANY PART FROM THE CIRCUIT FOR ANY REASON.

   f. You can remove "plug-in" type parts such as tubes, crystals, relays, etc., and test on appropriate test equipment.

   g. If you suspect that a certain resistor, capacitor, or transistor on a module or plug-in item is defective, remove the module or plug-in containing that part from its chassis. Ask the Test Administrator for a replacement module or plug-in in which that part is good.

h. After you receive a serviceable module or plug-in from the Test Administrator, replace the item and recheck the system.

i. Enter your assigned identification number on your Answer Sheet, complete your answer, and give the Answer Sheet to the Test Administrator.

ID No. ____________

TEST TS-11

ANSWER SHEET

A. What defective module did you find? Name module and give schematic designation. ____

B. Check Test Equipment You Used For Troubleshooting

___ Oscilloscope

___ VOM

___ VTVM

___ Signal Generator

___ Sweep Generator

___ Frequency Meter

___ Power Meter

___ Spectrum Analyzer

___ Distortion Indicator

___ Tube Tester

___ Transistor Checker

___ Semiconductor Diode Tester

___ Audio Oscillator

List any Specialized Test Equipment You Used For Troubleshooting.

____

ID No. __________

TEST TS-11

PERFORMANCE EVALUATION SHEET

MODULE/PLUG-IN

Power Supply Assembly ___

Track Resolver Assembly ___

Relay Chassis Assembly ___

Translator Driver Assembly ___

Regular Assembly ___

NPN Multiar Assembly ___

High Voltage Switch Assembly ___

PNP Multiar and Flip-Flop Assembly ___

Schmitt Trigger and Gates Assembly ___

Triple Binary Assembly ___

Actuator Assembly ___

Servo Amplifier Assembly ___

Control-Indicator Assembly ___